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Serial No.: 10/696,889 Filed: 10/30/03
Examiner: Group Art Unit: 2812
Applicant: Mark A. Burns *et al.*
Title: **Thermal Micro-Valves for Micro-Integrated Devices**
Atty. Docket No.: UM-08280 Sheet 1 of 31

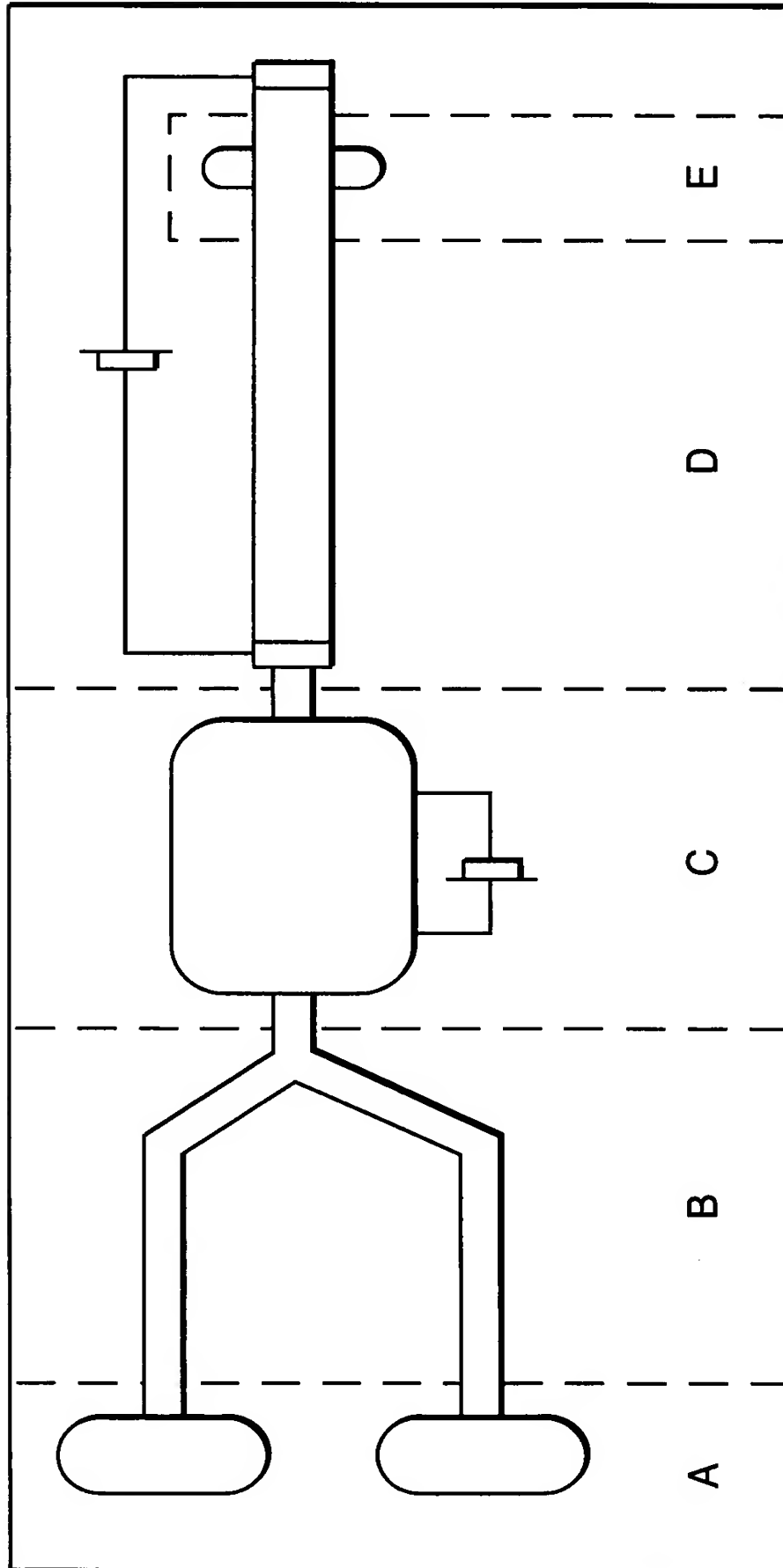
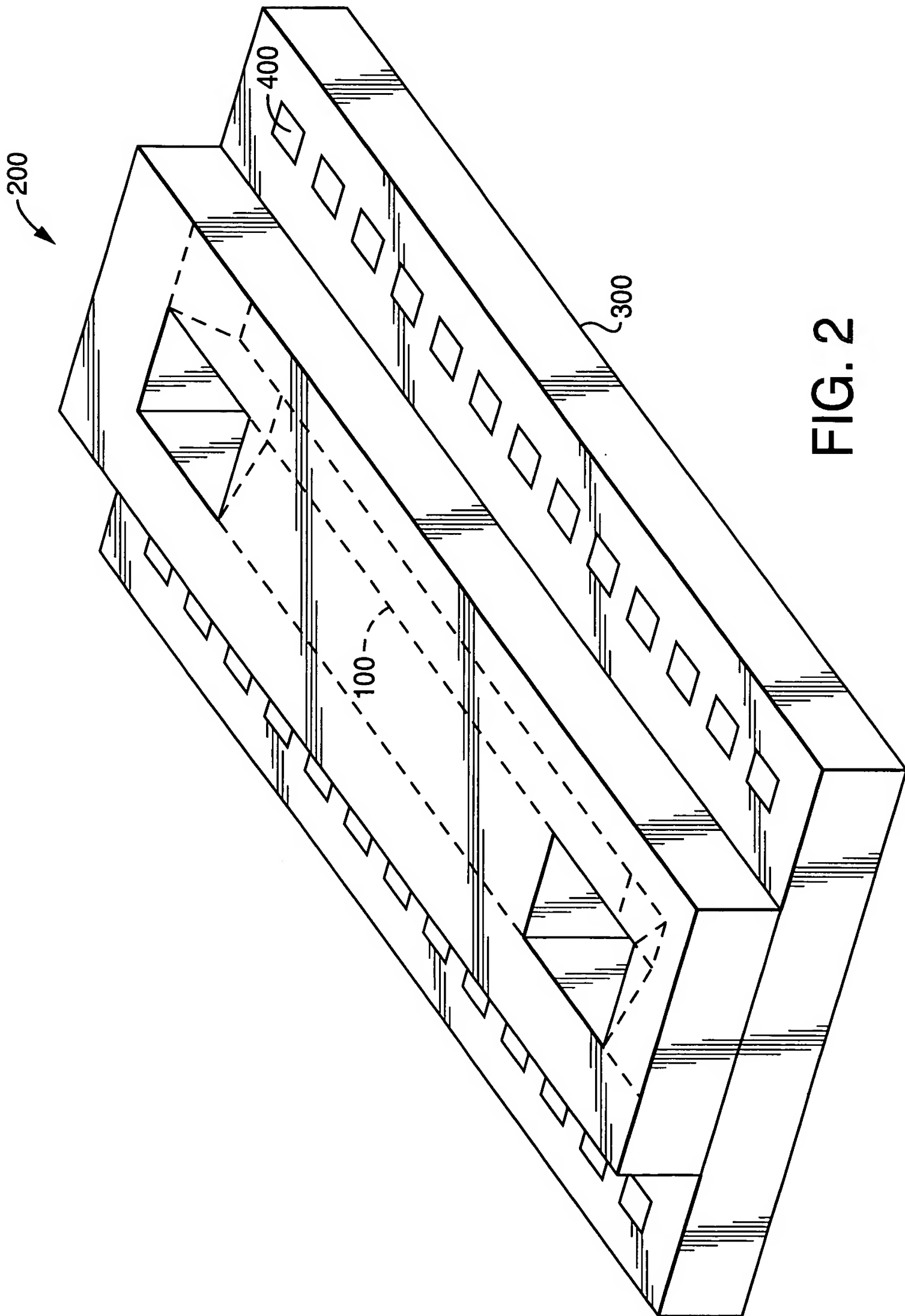


FIG. 1



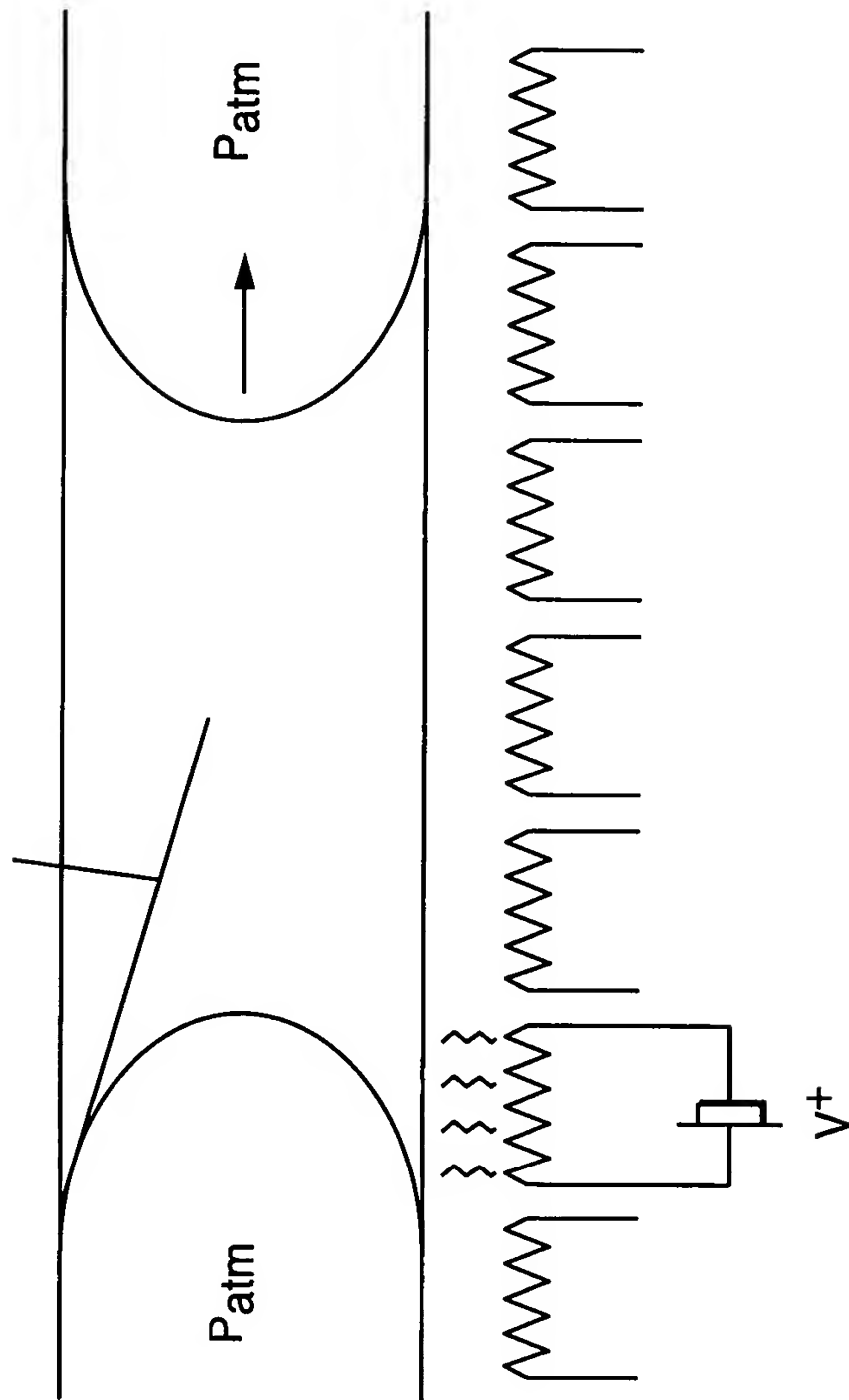


FIG. 3

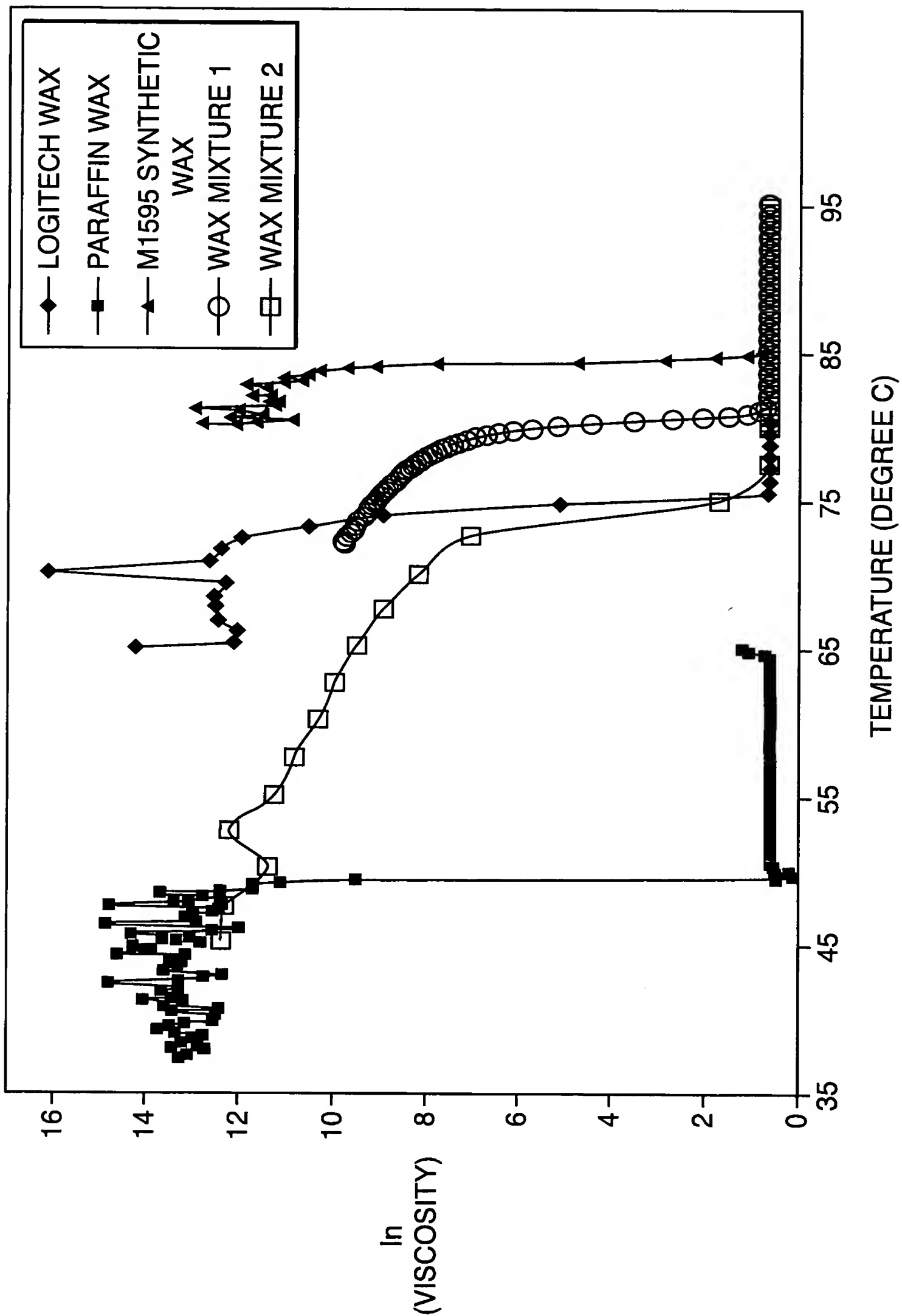


FIG. 4

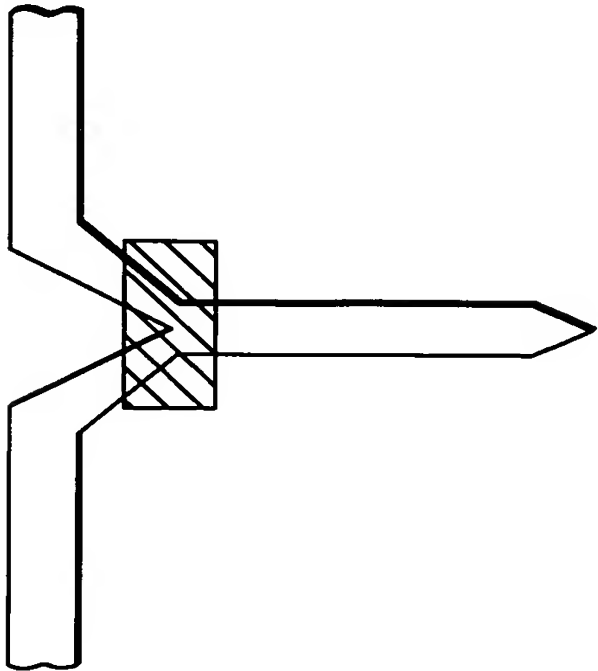


FIG. 5C

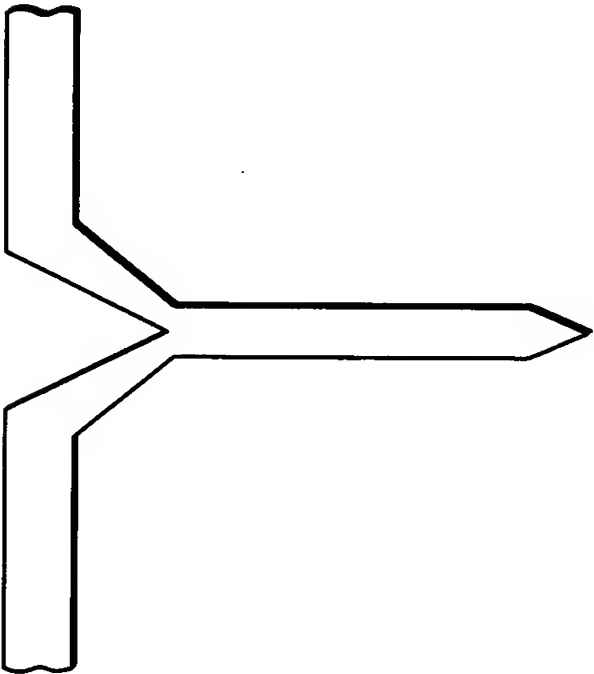


FIG. 5B

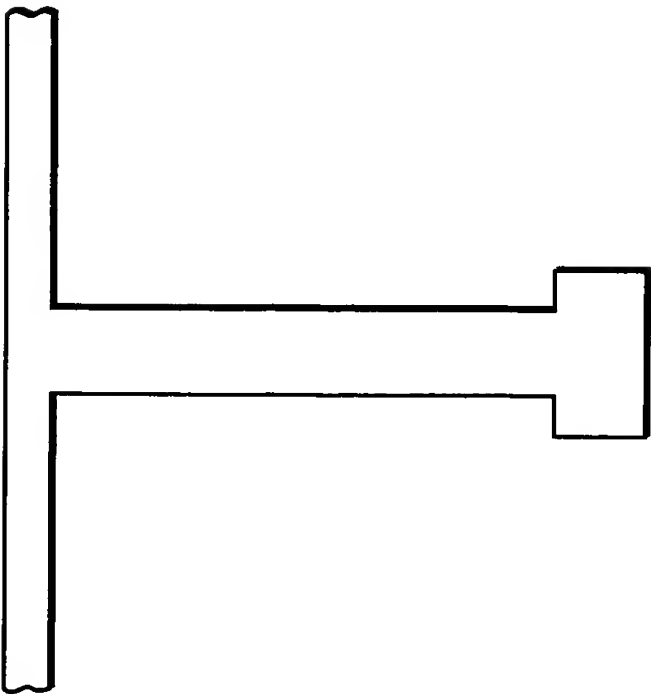


FIG. 5A

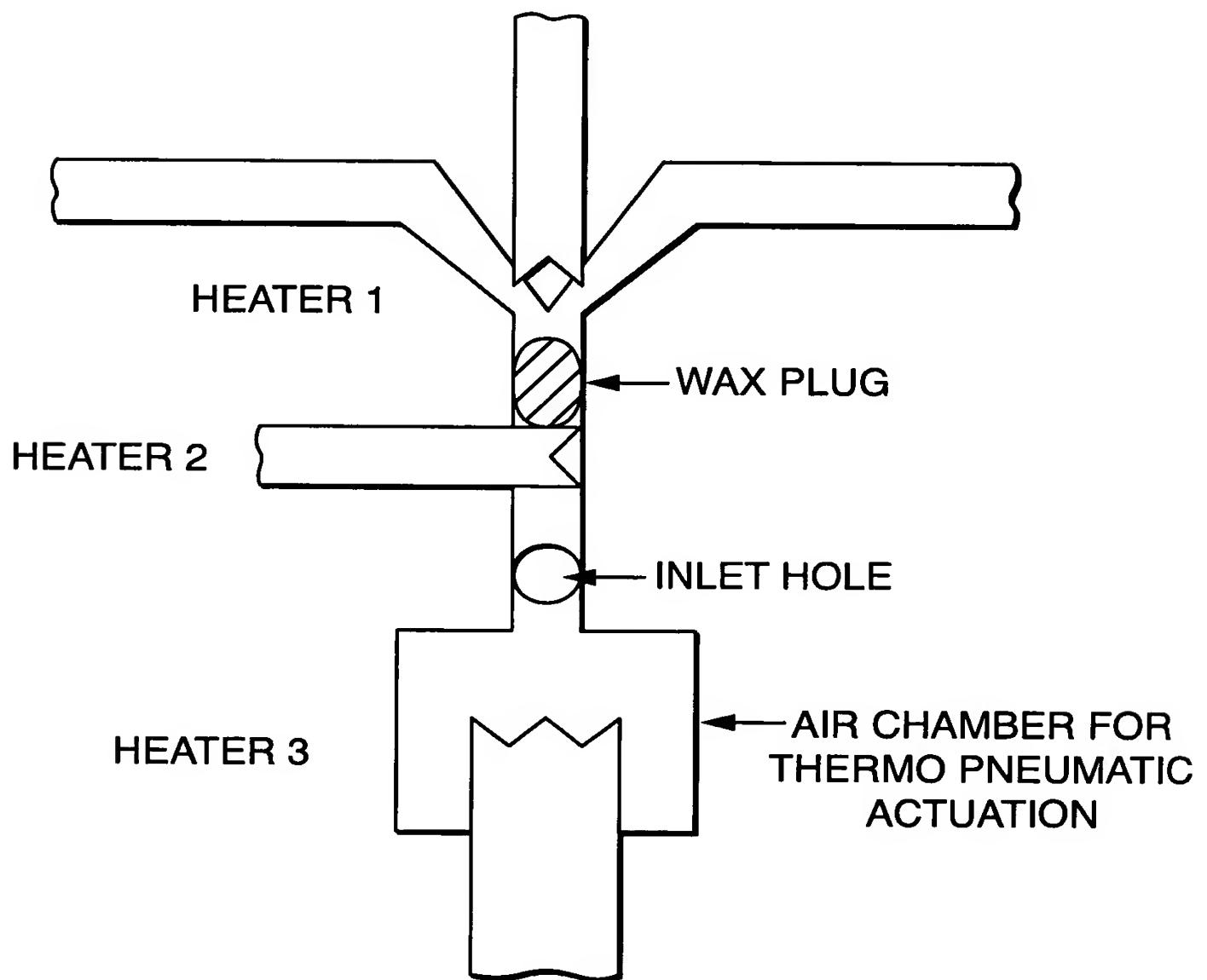
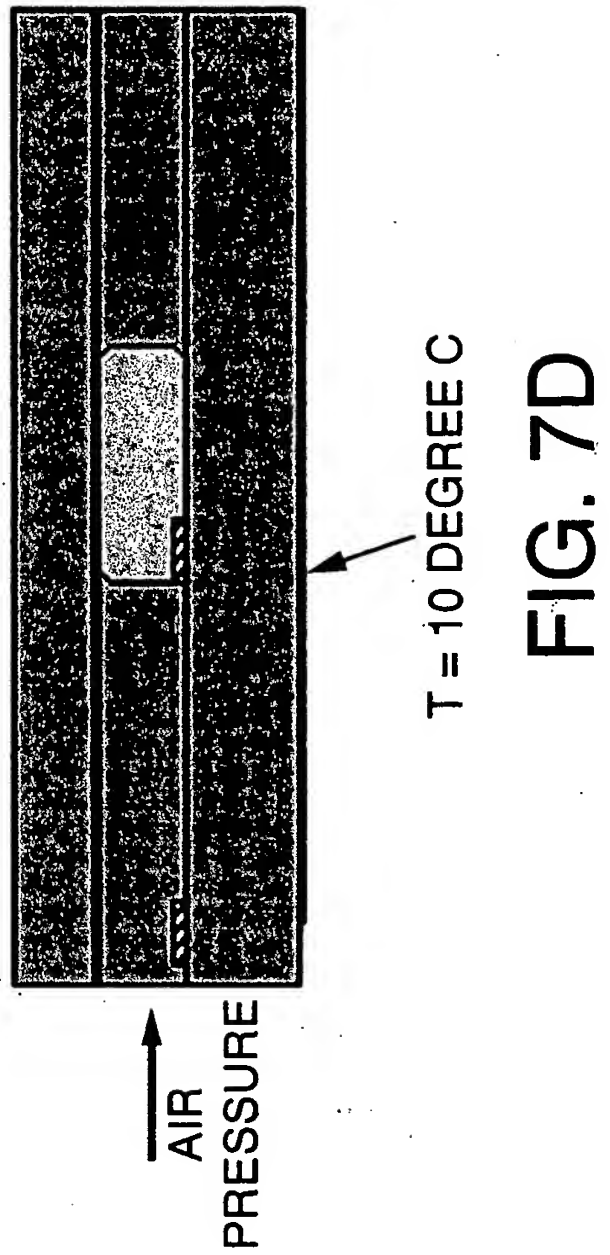
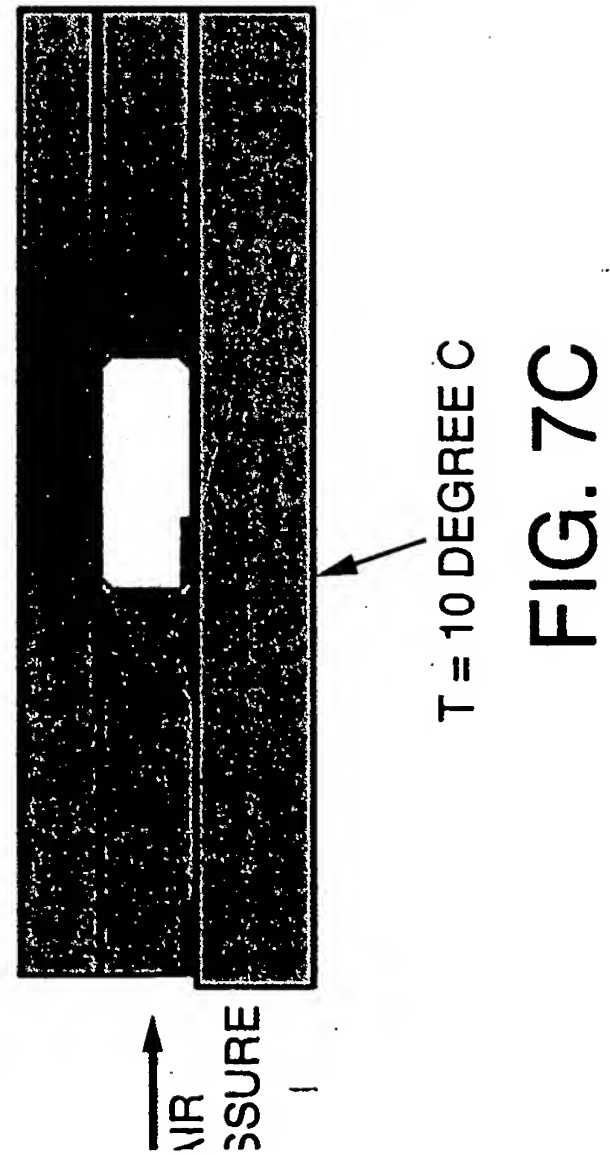
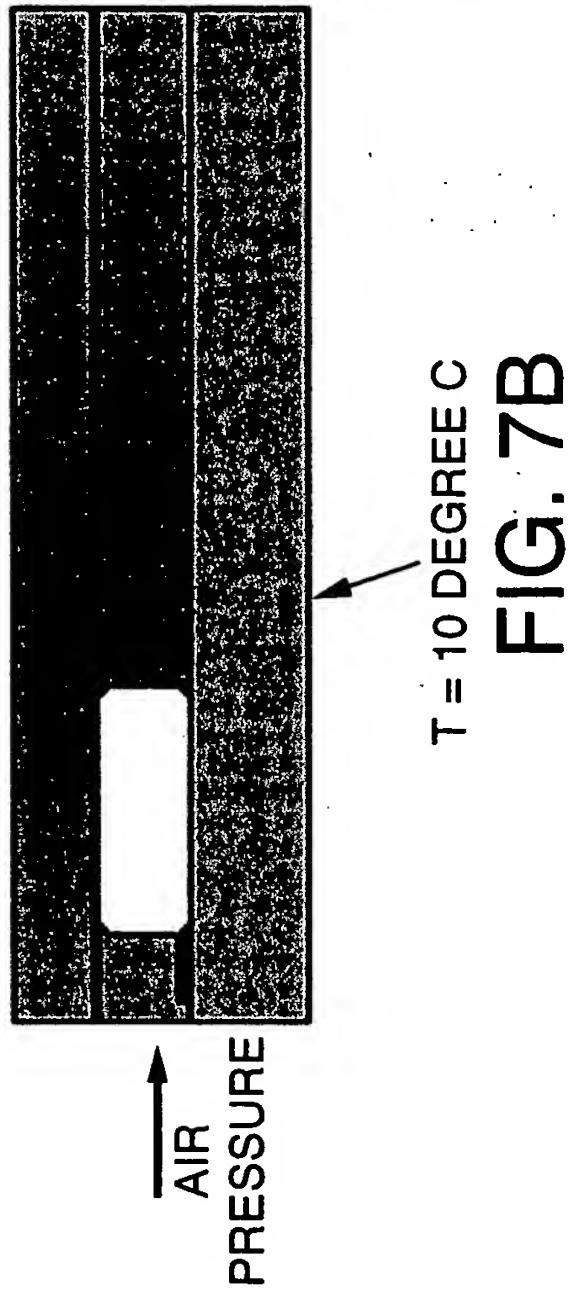
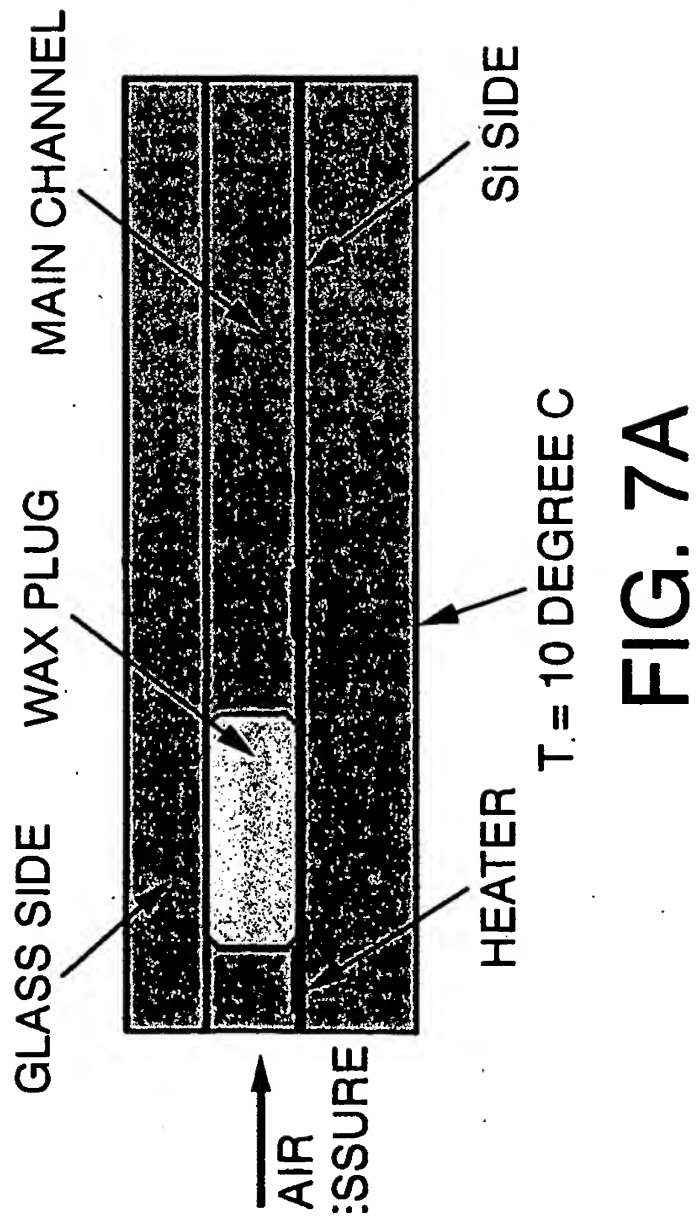


FIG. 6



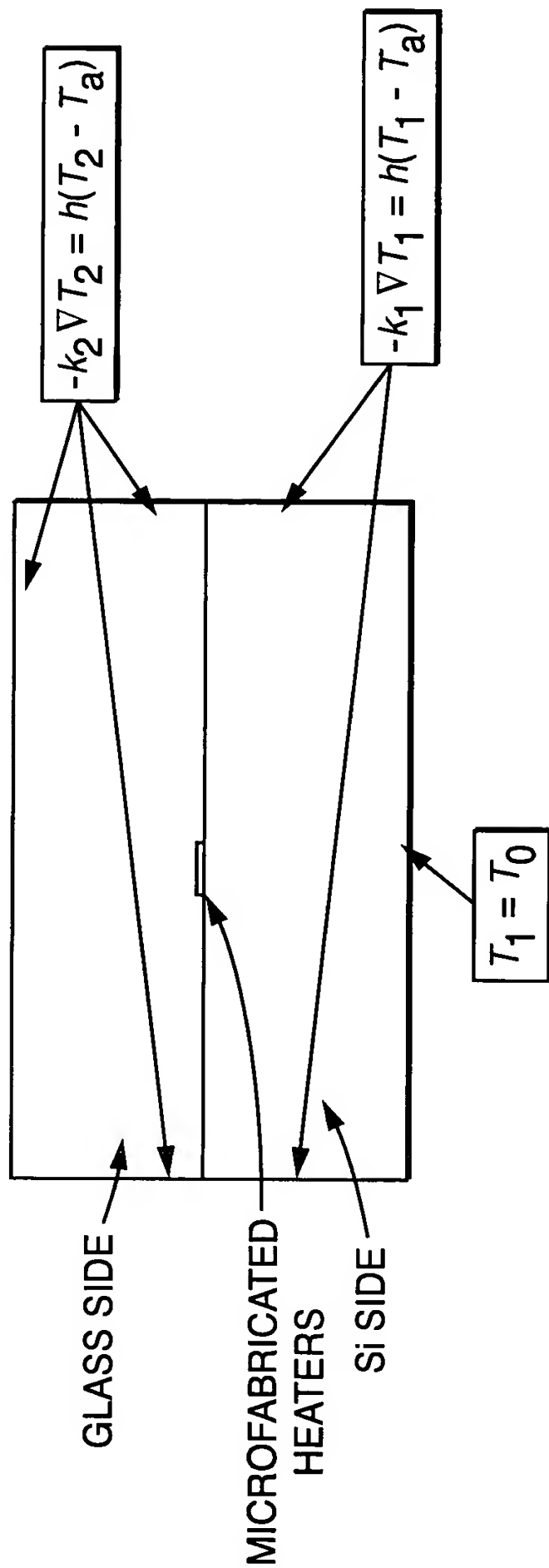


FIG. 8

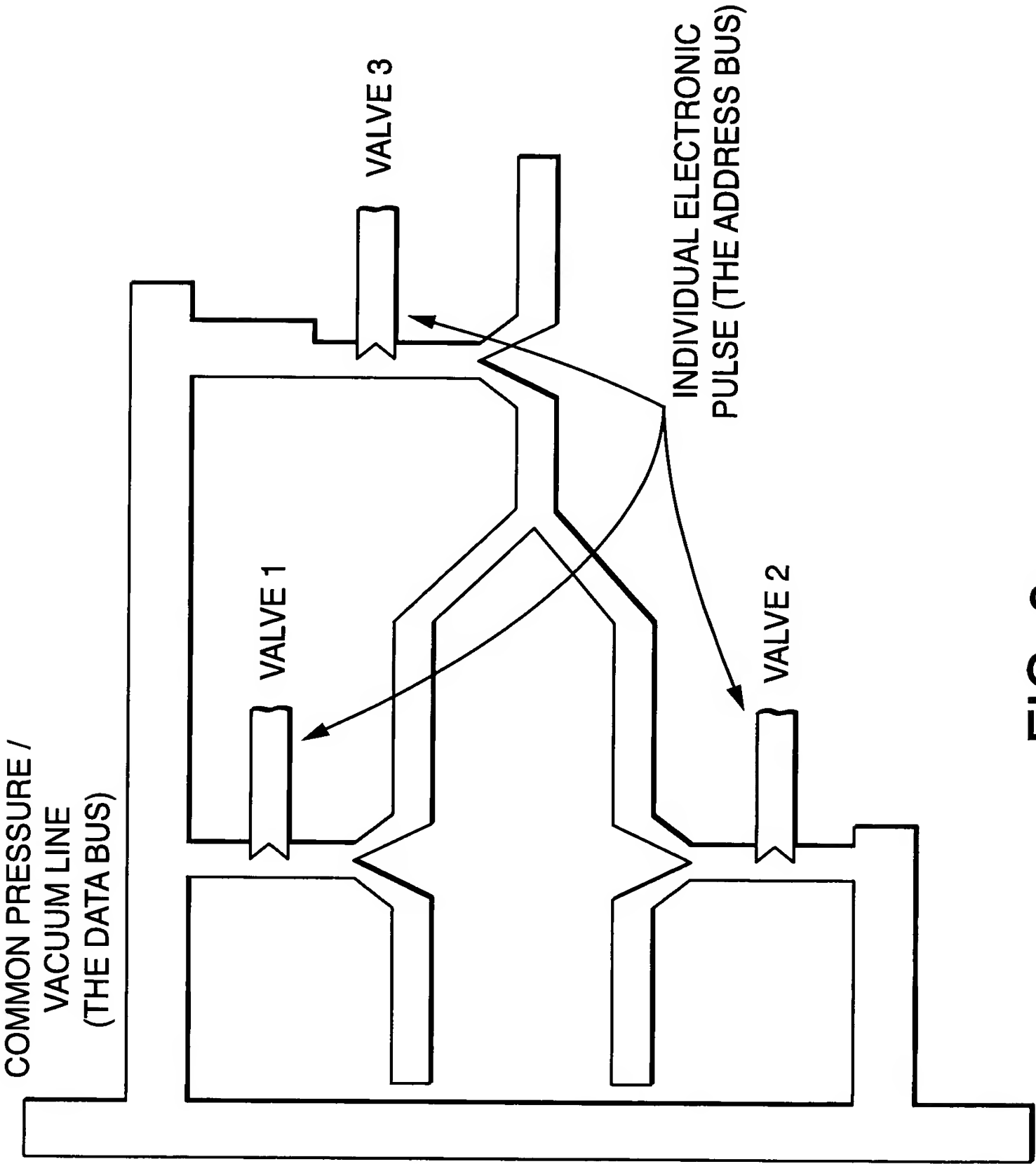


FIG. 9

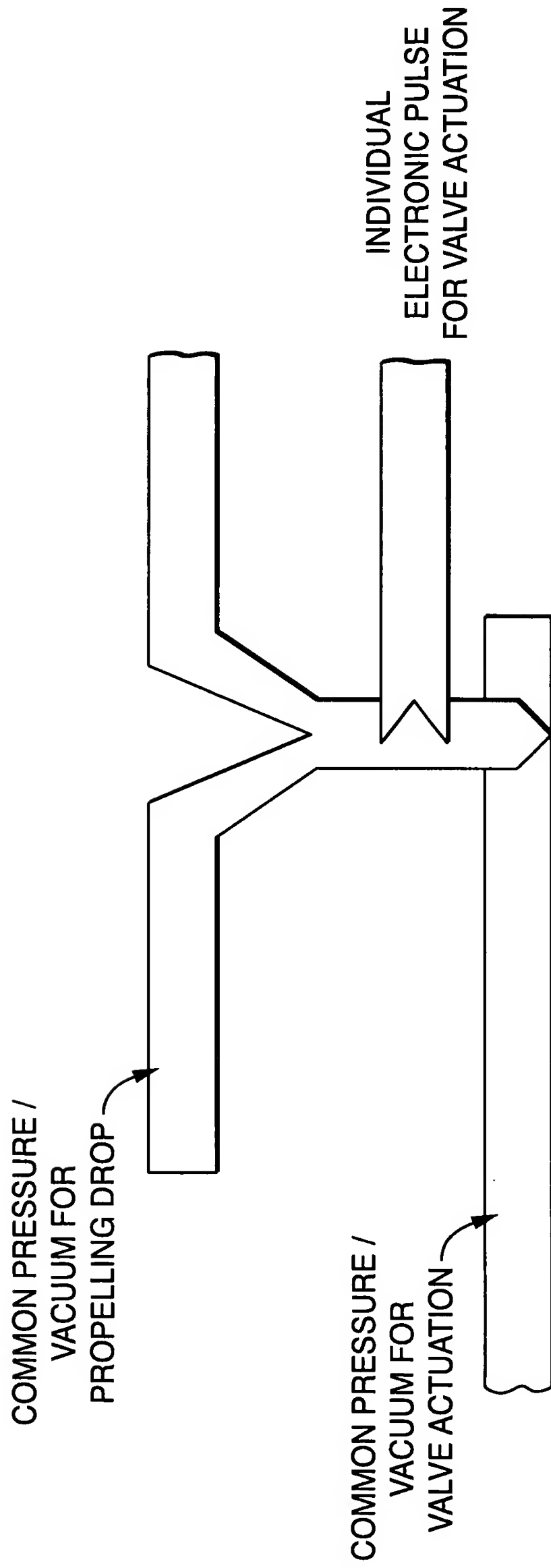


FIG. 10

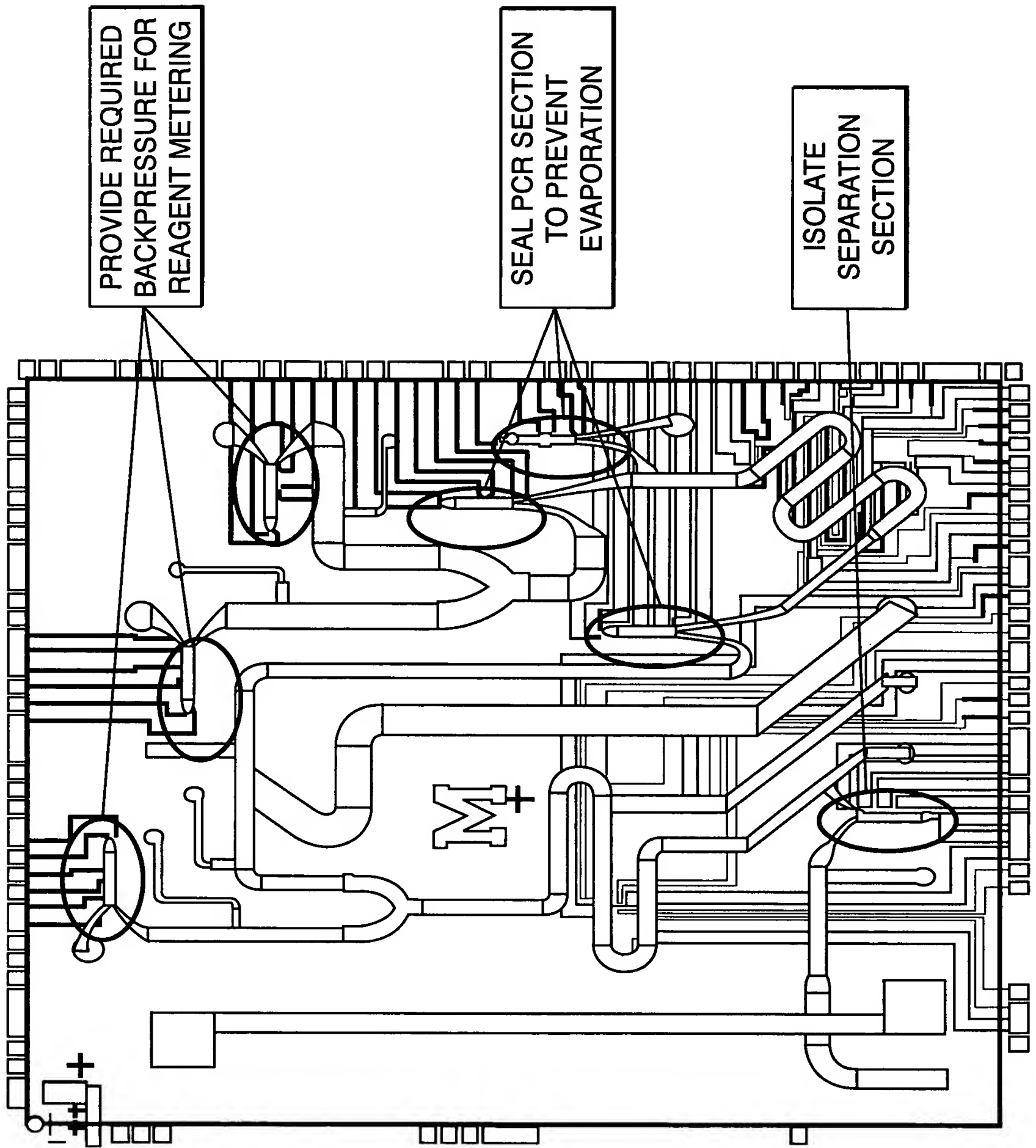


FIG. 11

Serial No.: 10/696,889 Filed: 10/30/03
Examiner: Group Art Unit: 2812
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Title: Thermal Micro-Valves for Micro-
Integrated Devices
Atty. Docket No.: UM-08280 Sheet 12 of 31

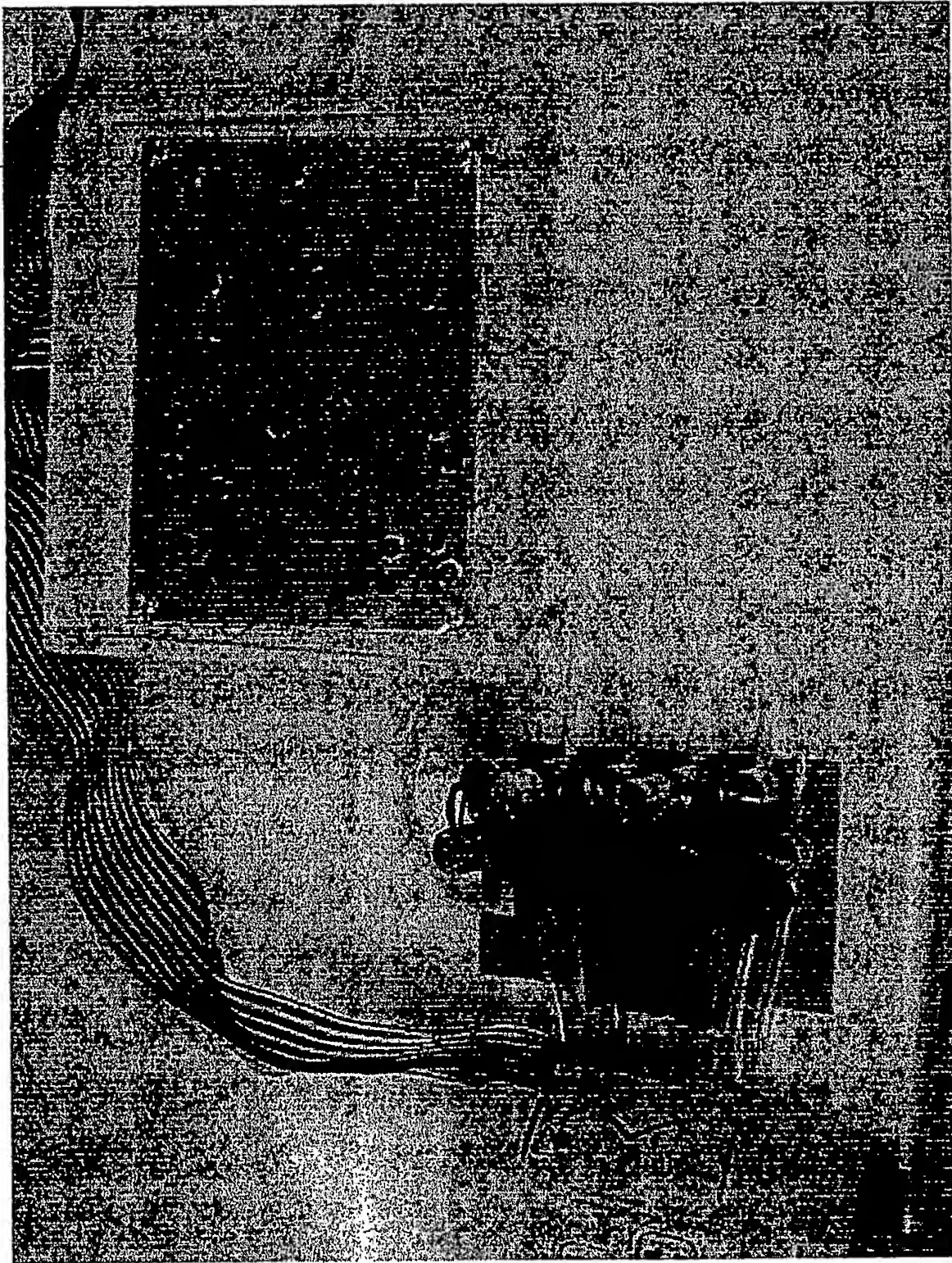


FIG. 12

FIG. 13A



FIG. 13B

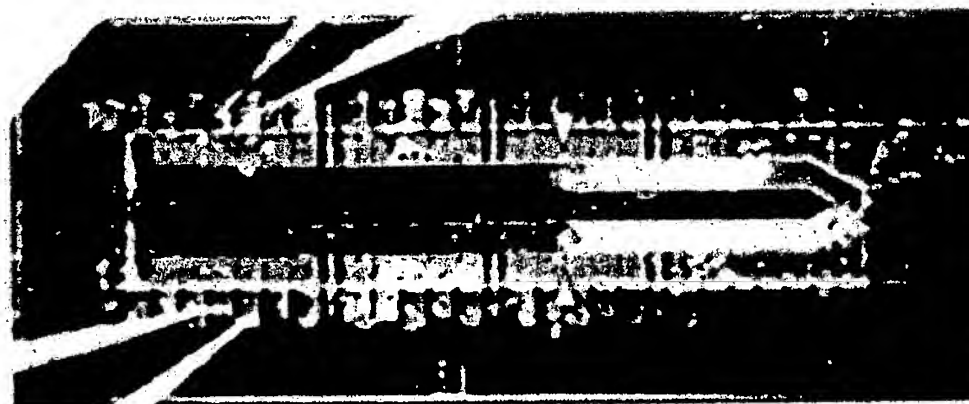
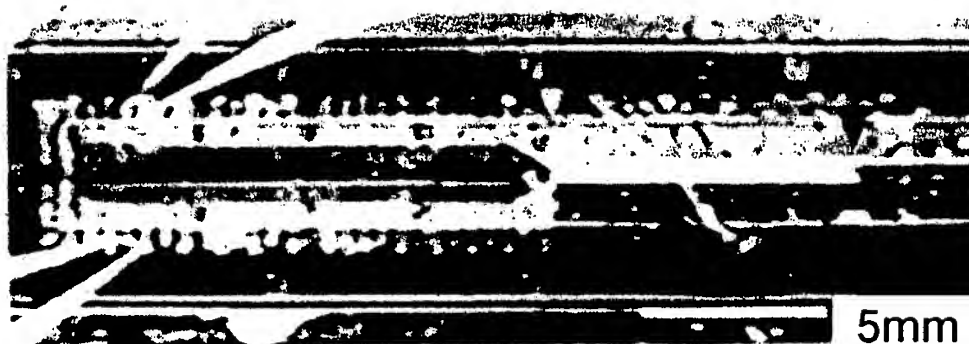


FIG. 13C



FIG. 13D



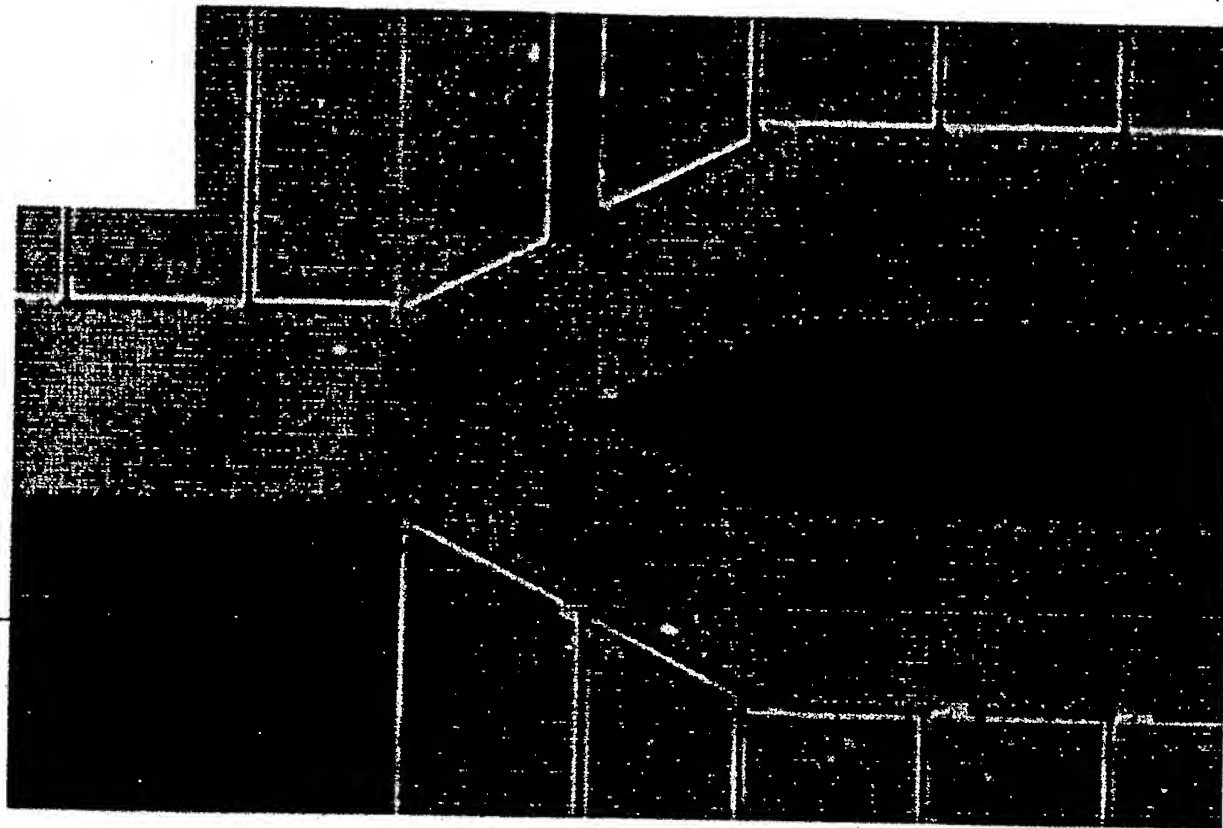


FIG. 14A



SiO₂ Al SiO_x SixNy

FIG. 14B

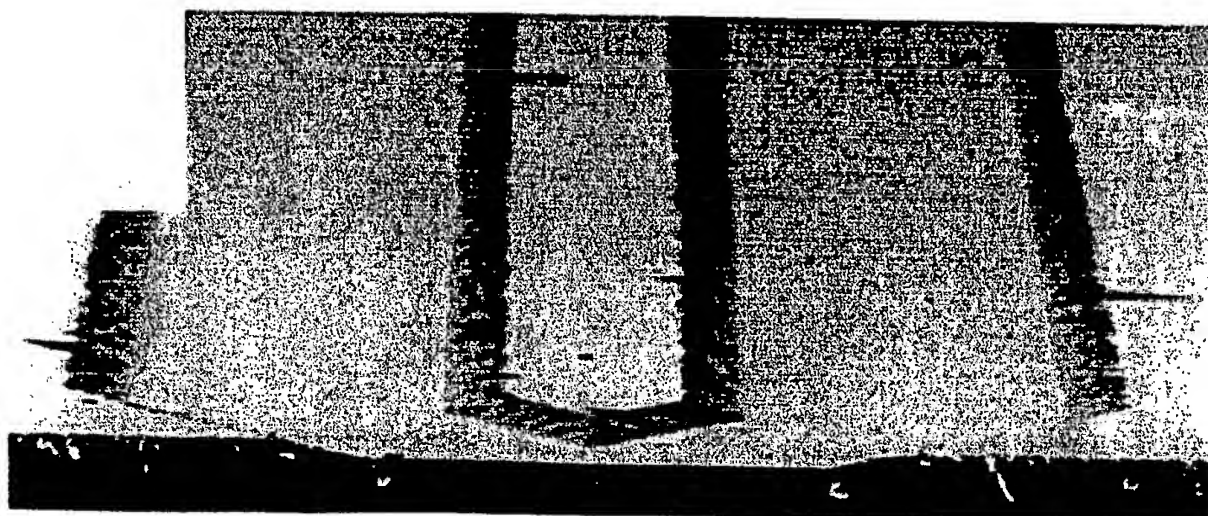


FIG. 15A

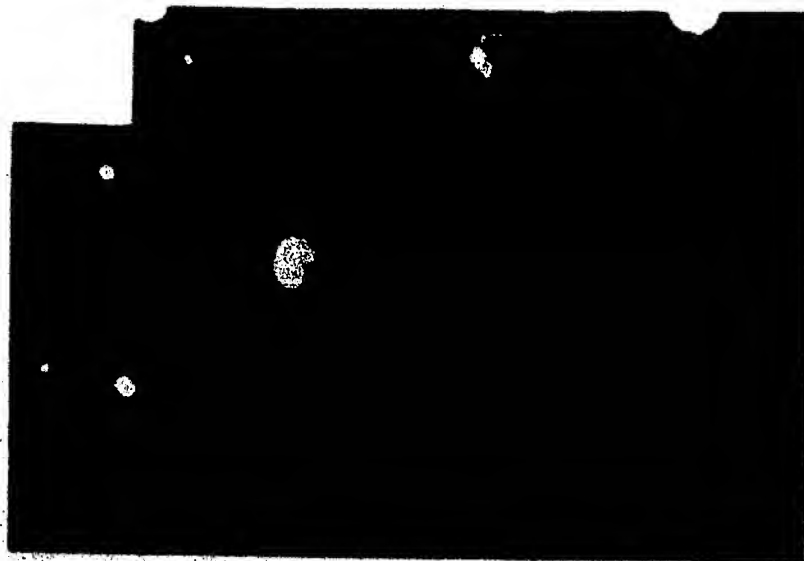


FIG. 15B

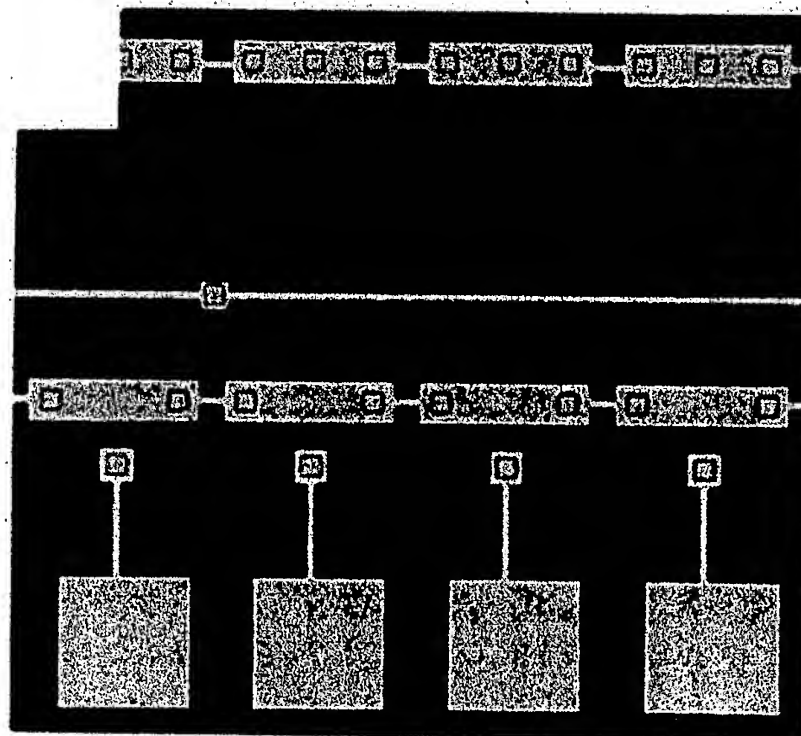
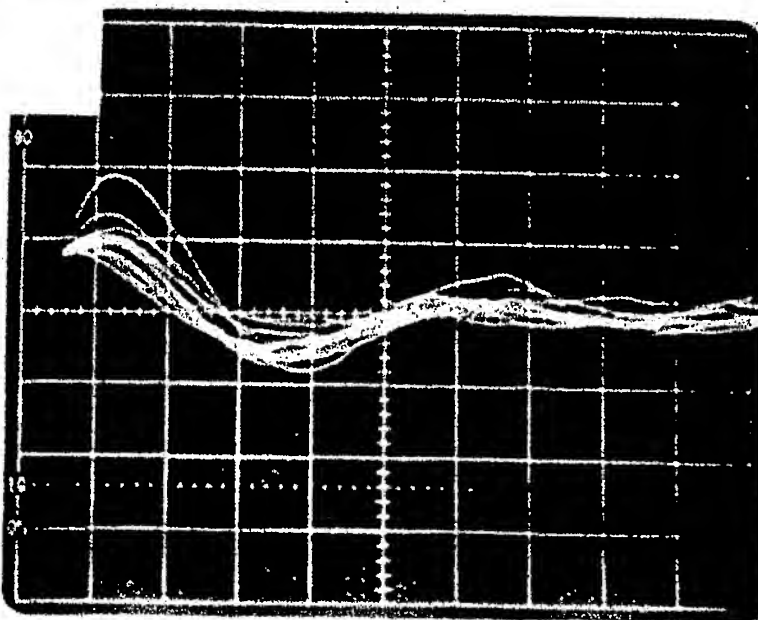


FIG. 15C



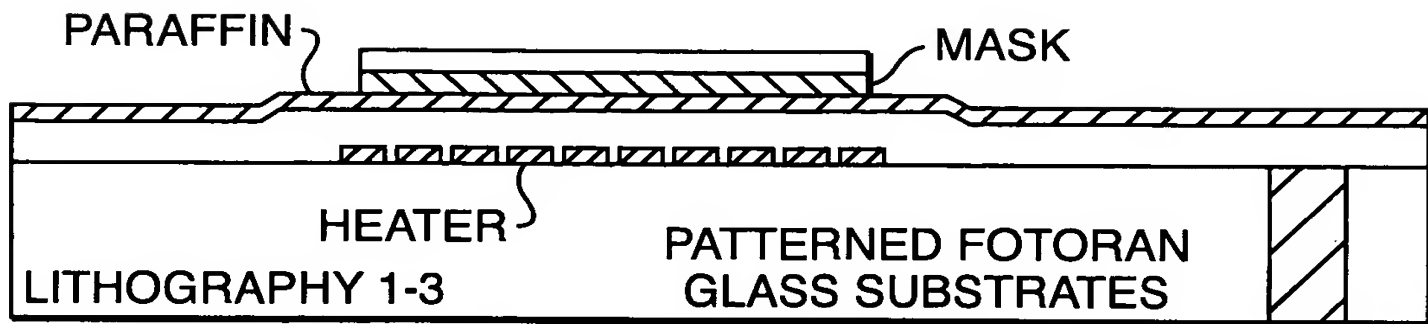


FIG. 16A

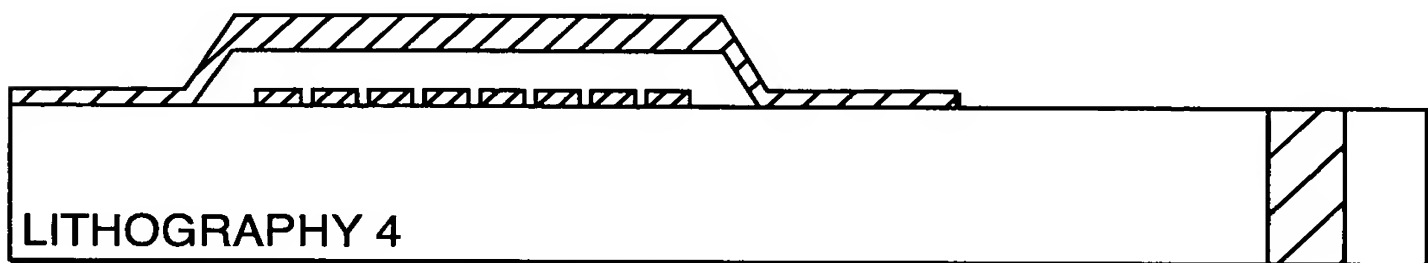


FIG. 16B

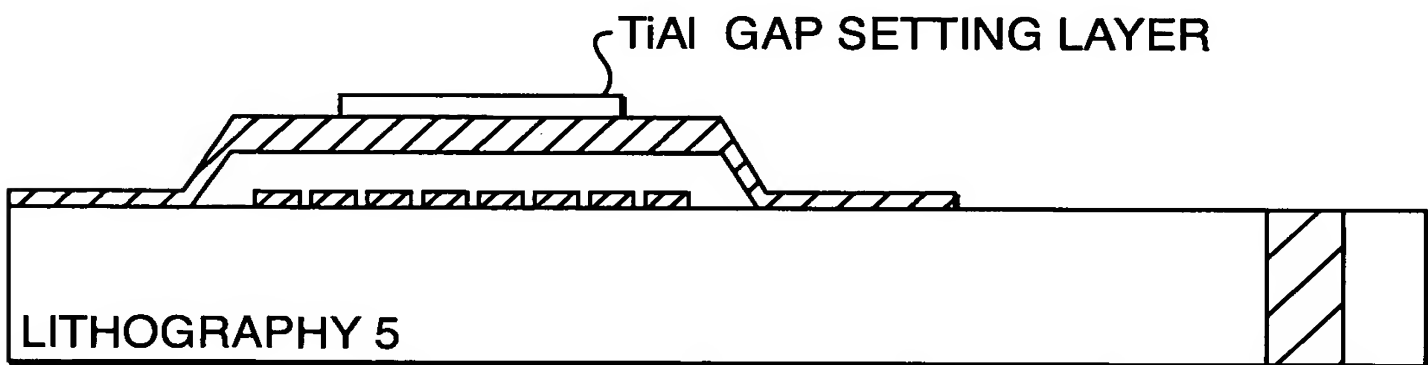


FIG. 16C

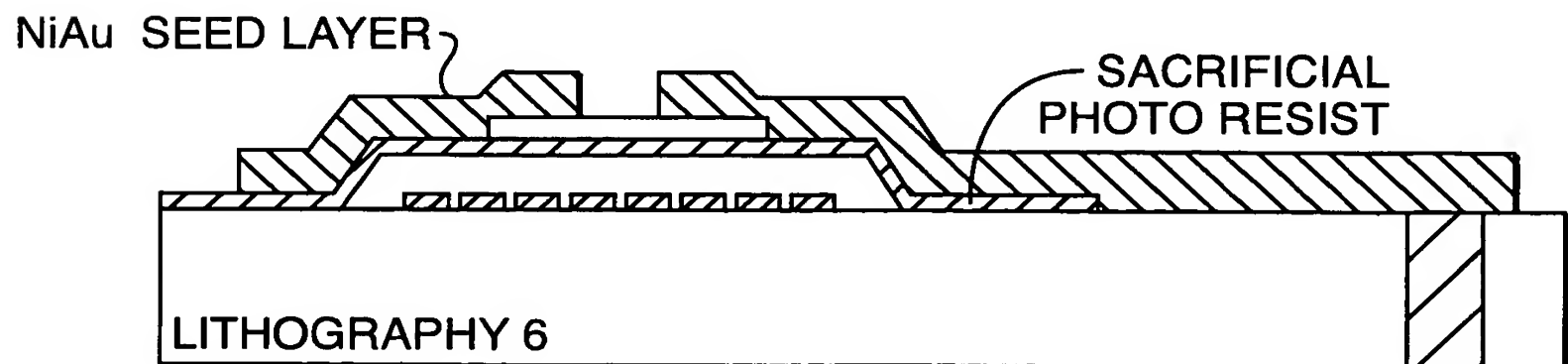


FIG. 16D

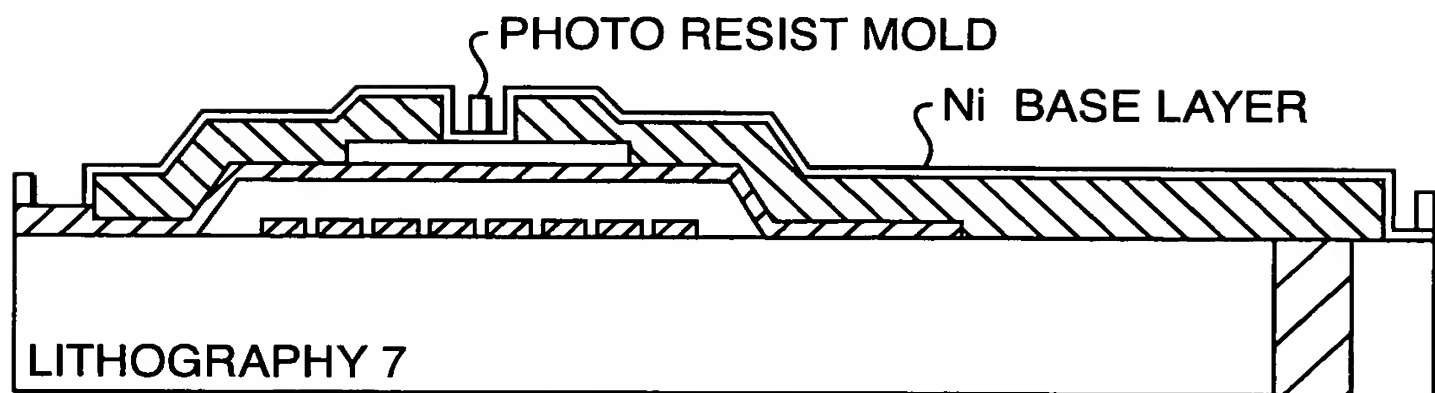


FIG. 16E

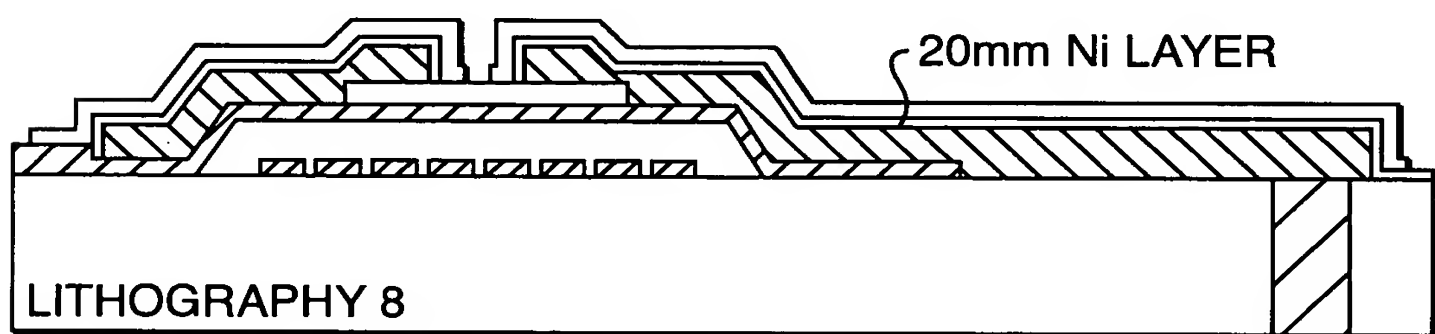


FIG. 16F

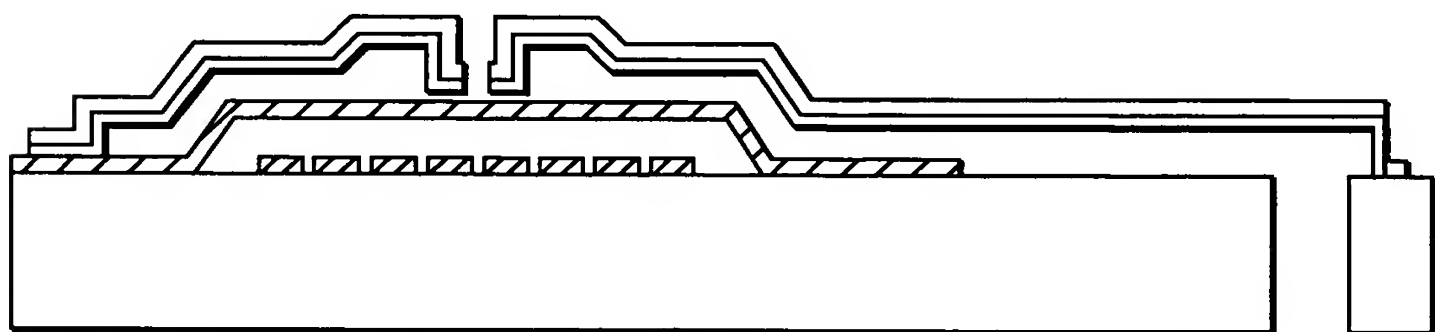


FIG. 16G

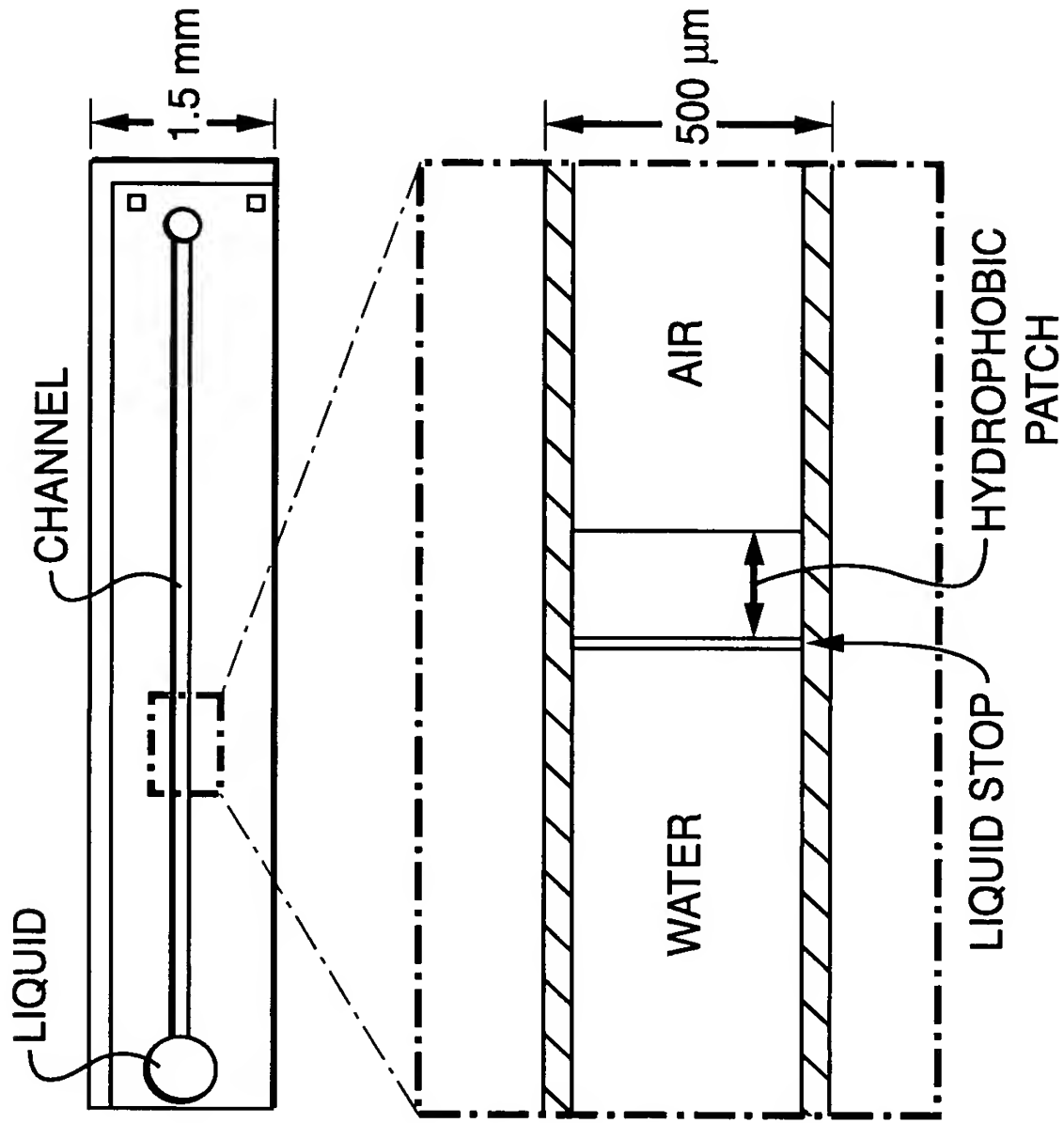


FIG. 17A

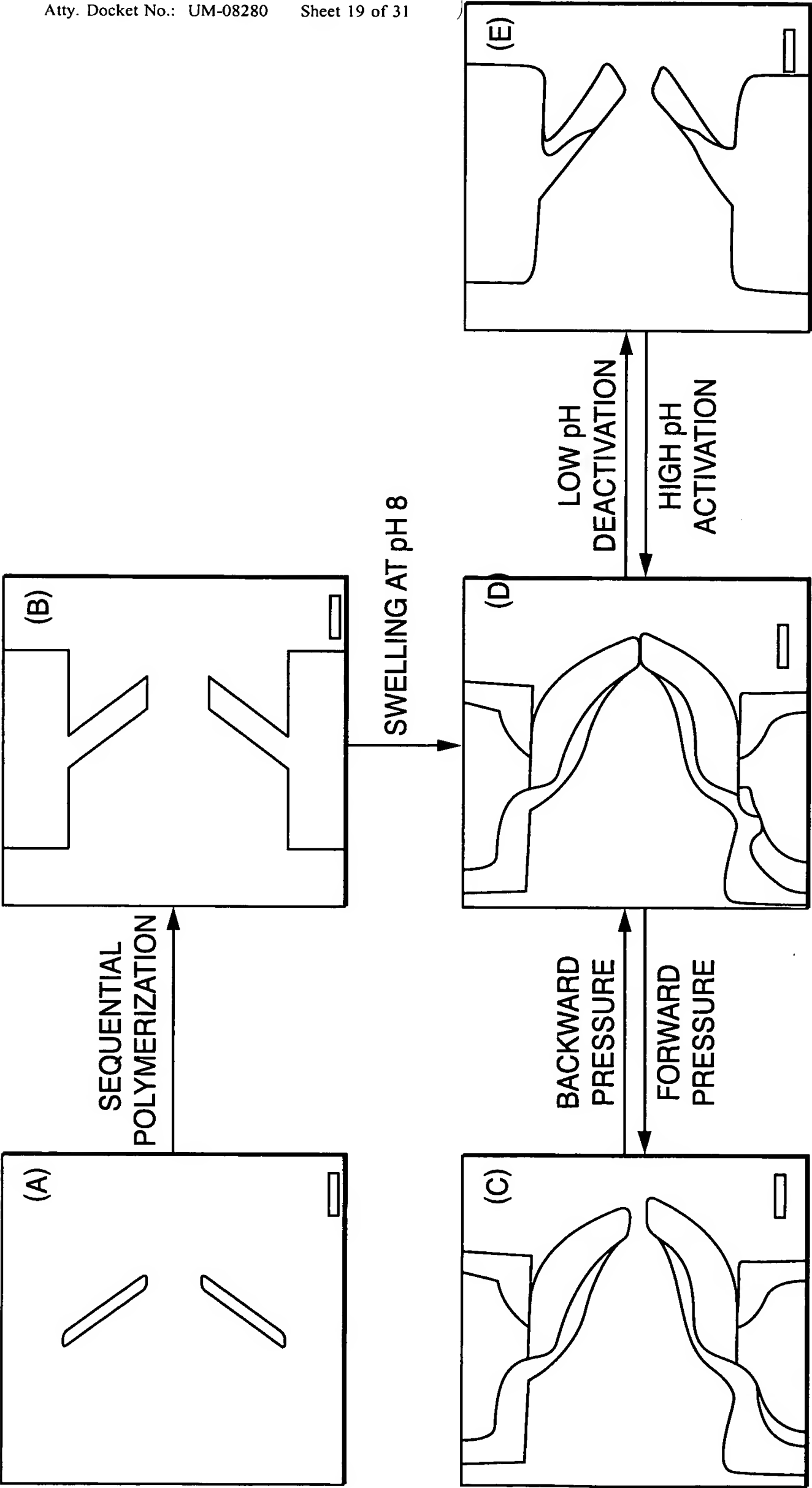


FIG. 17B

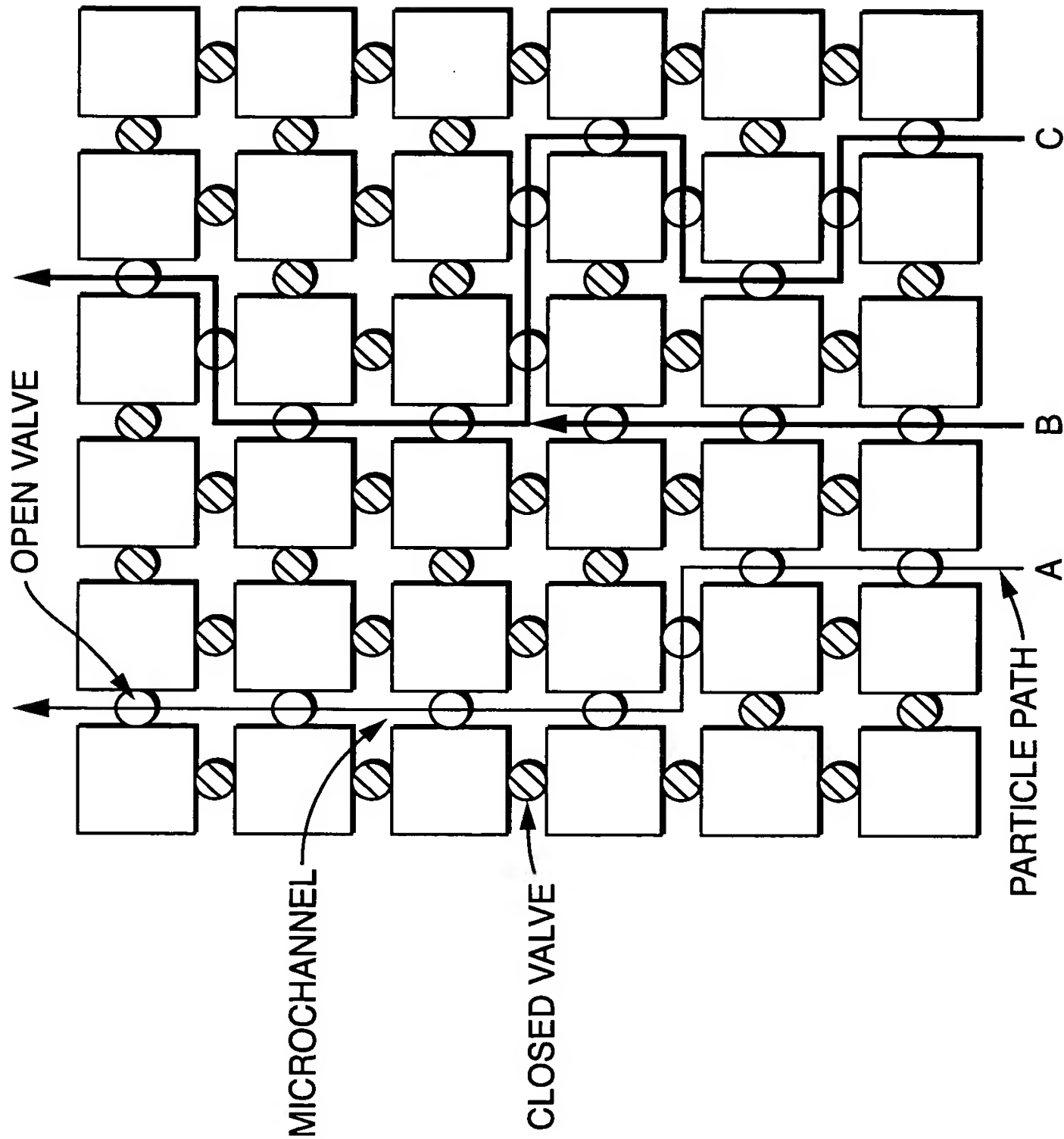


FIG. 18A

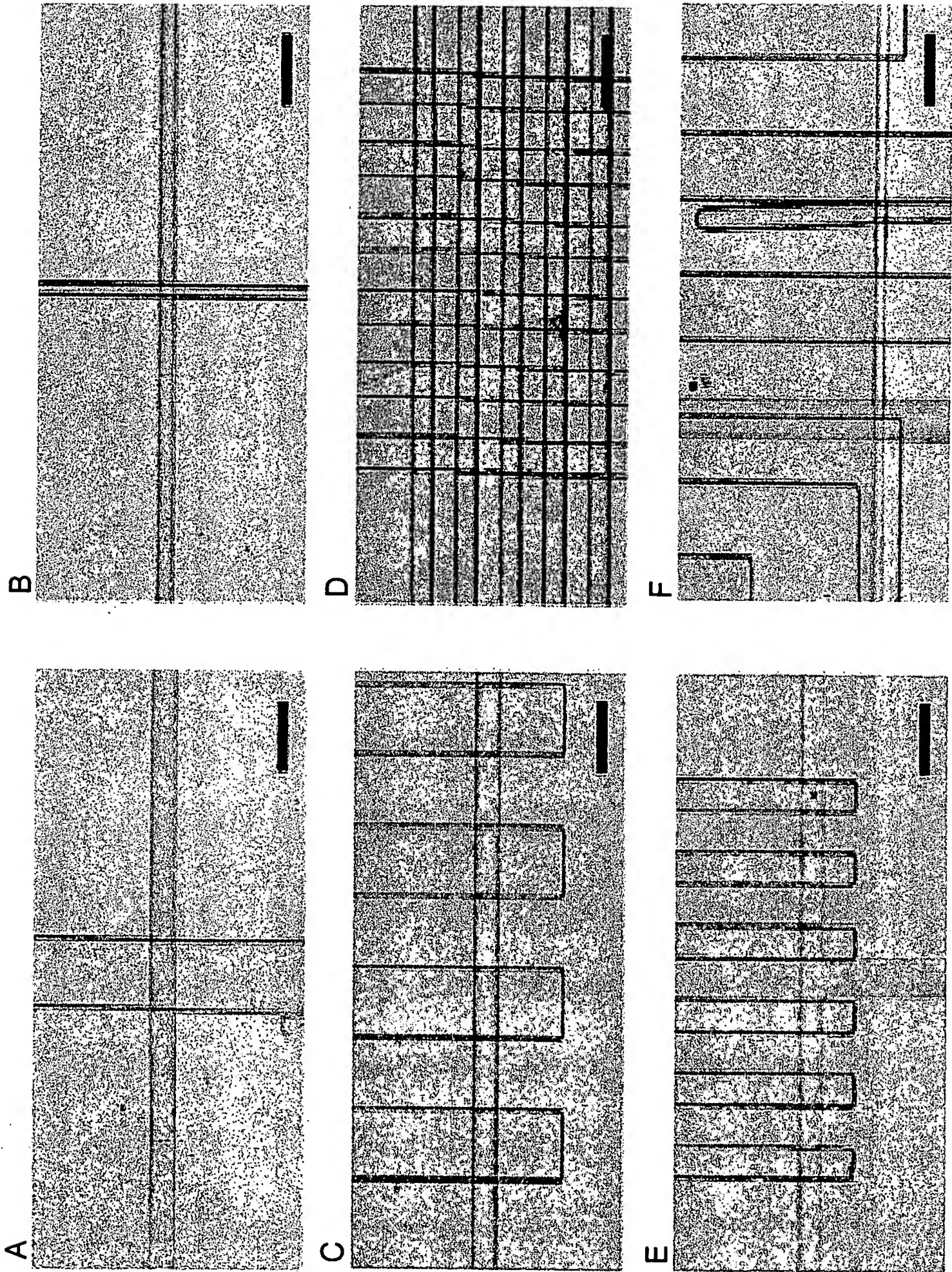


FIG. 18B

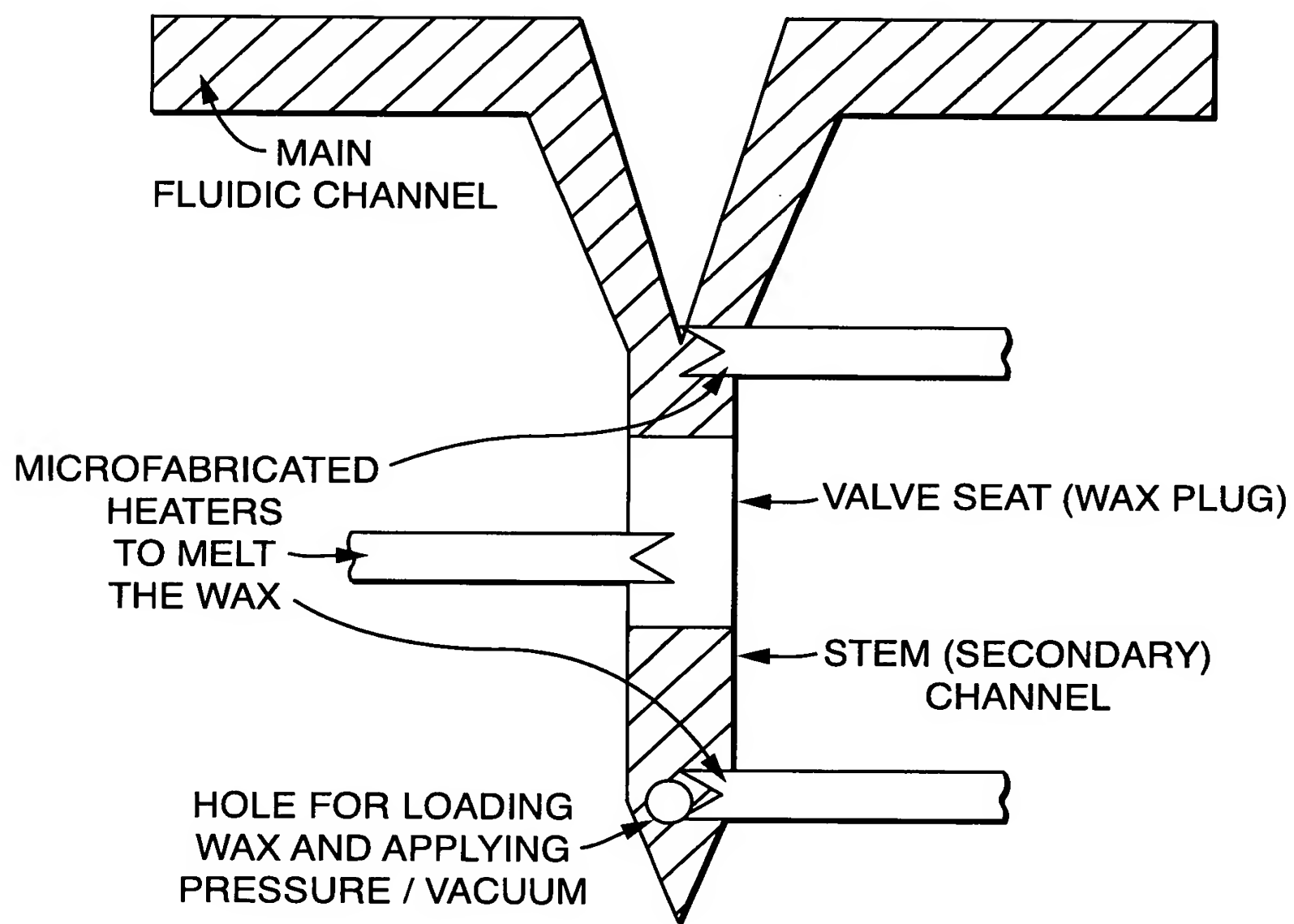


FIG. 19

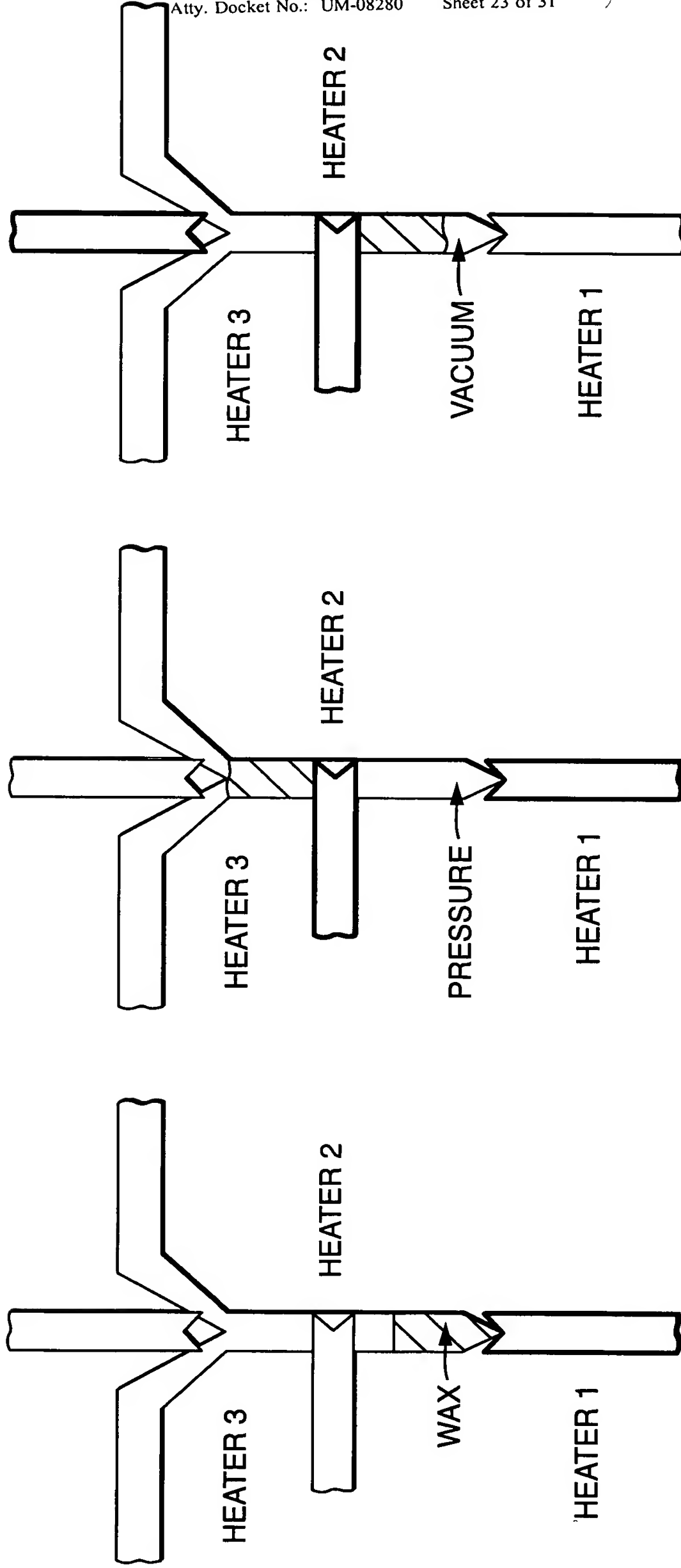


FIG. 20A

FIG. 20B

FIG. 20C

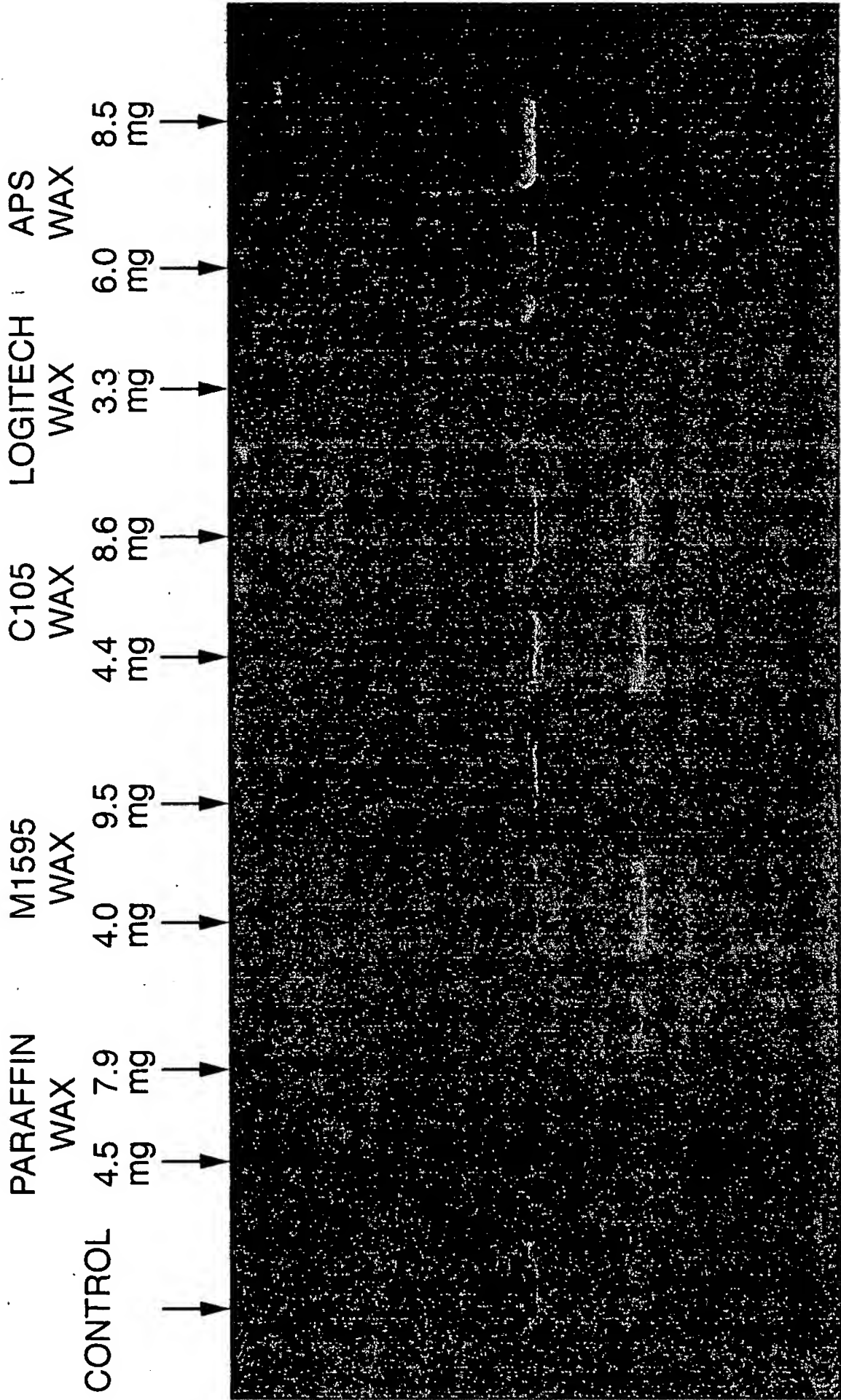


FIG. 21

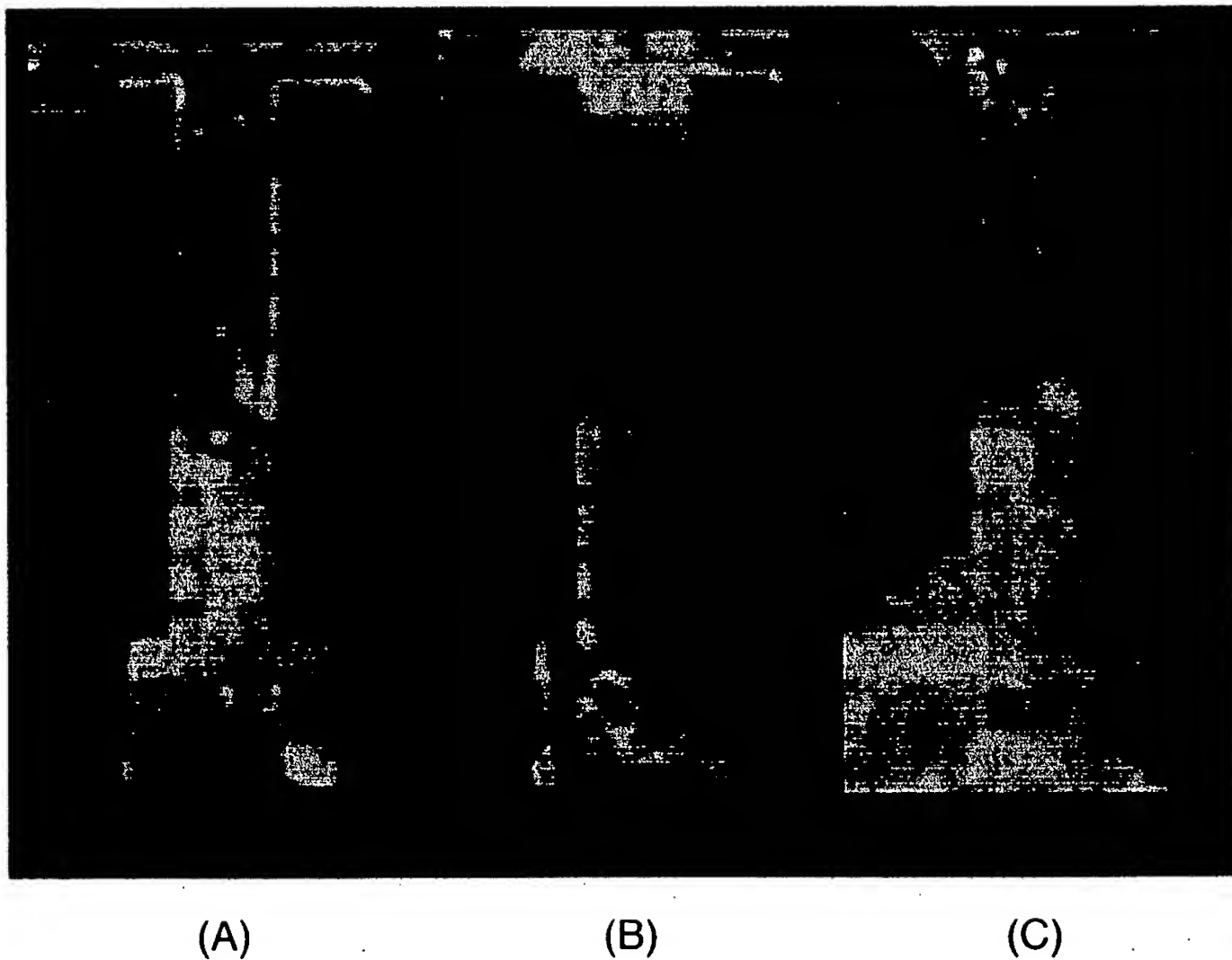


FIG. 22

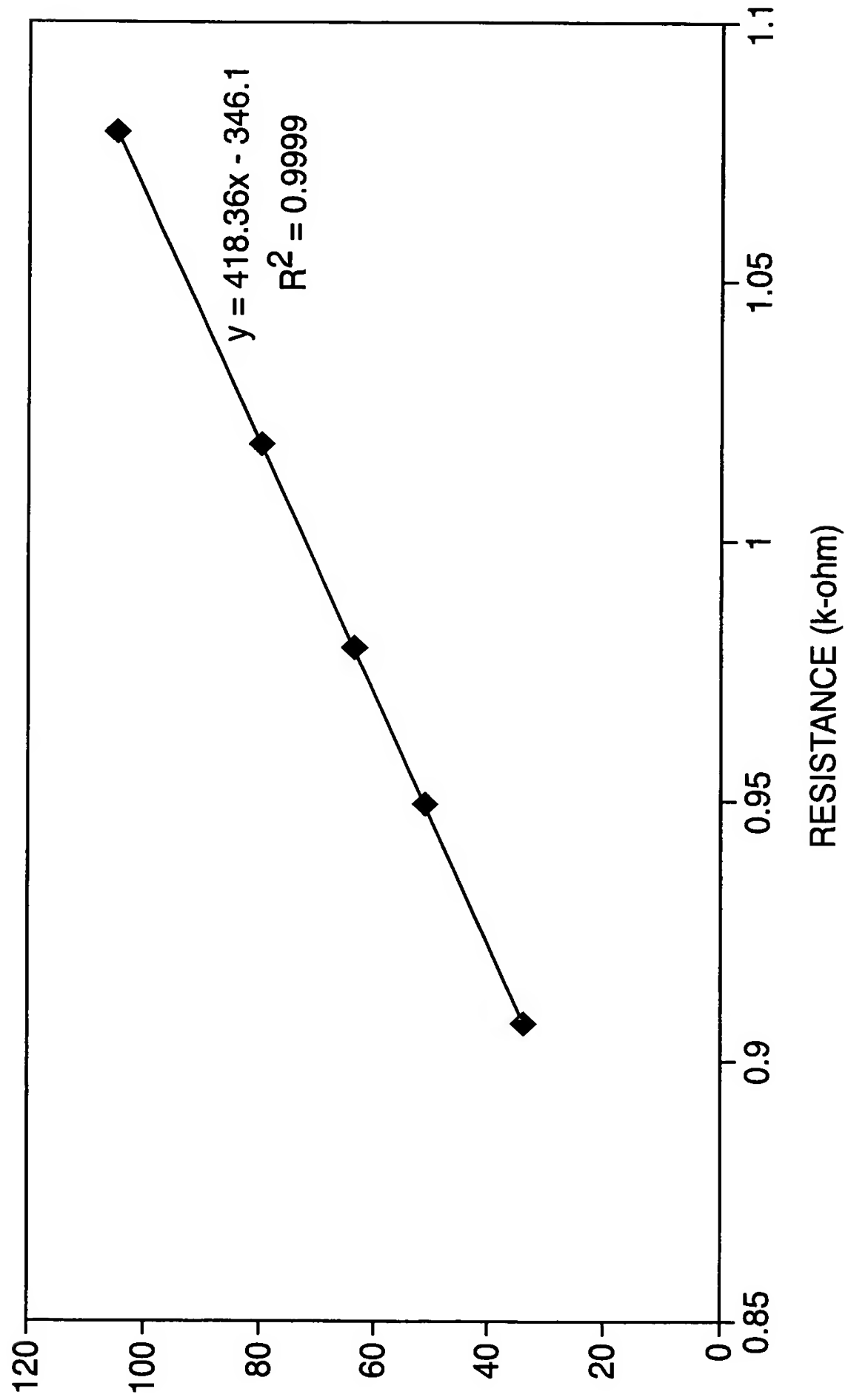


FIG. 23

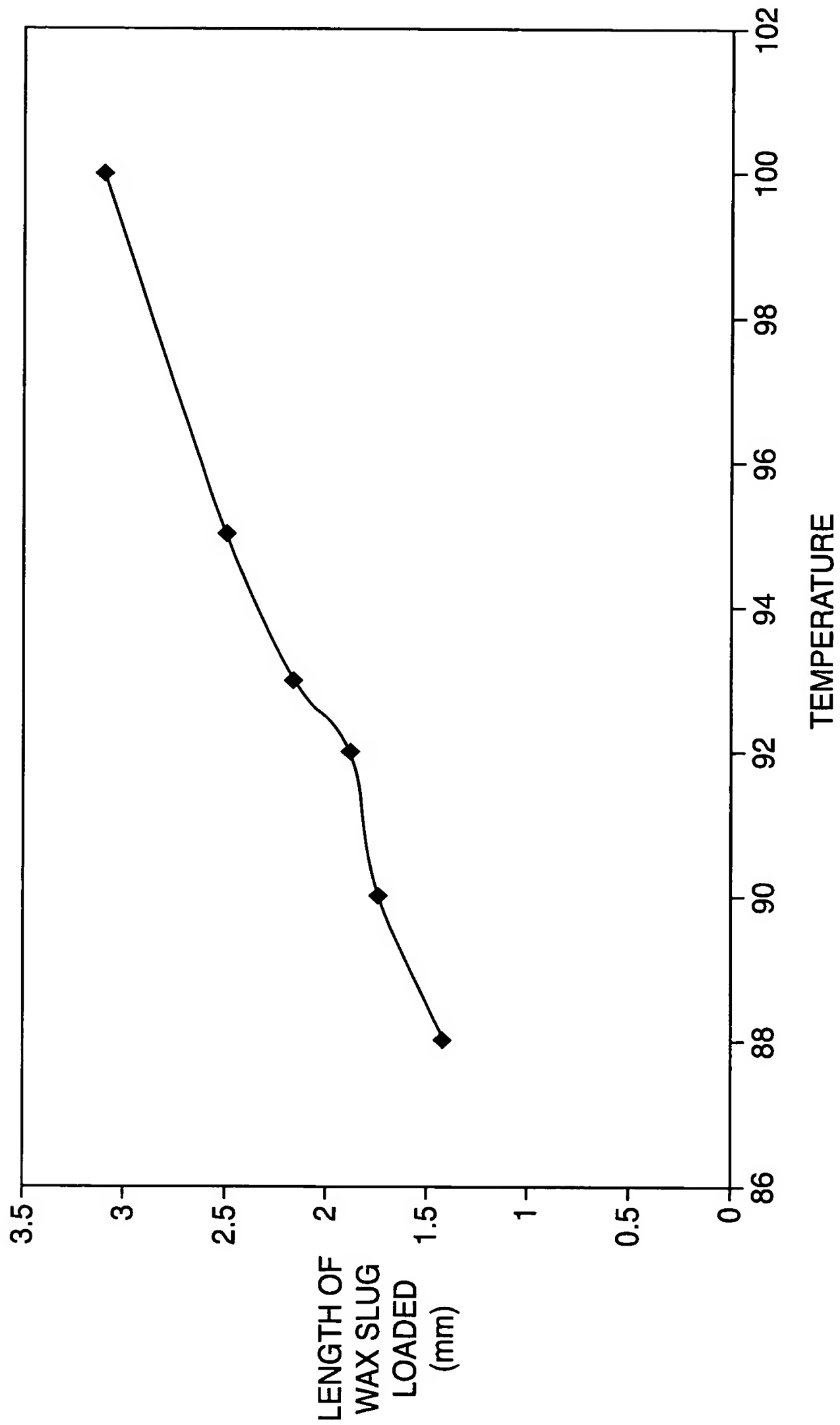


FIG. 24

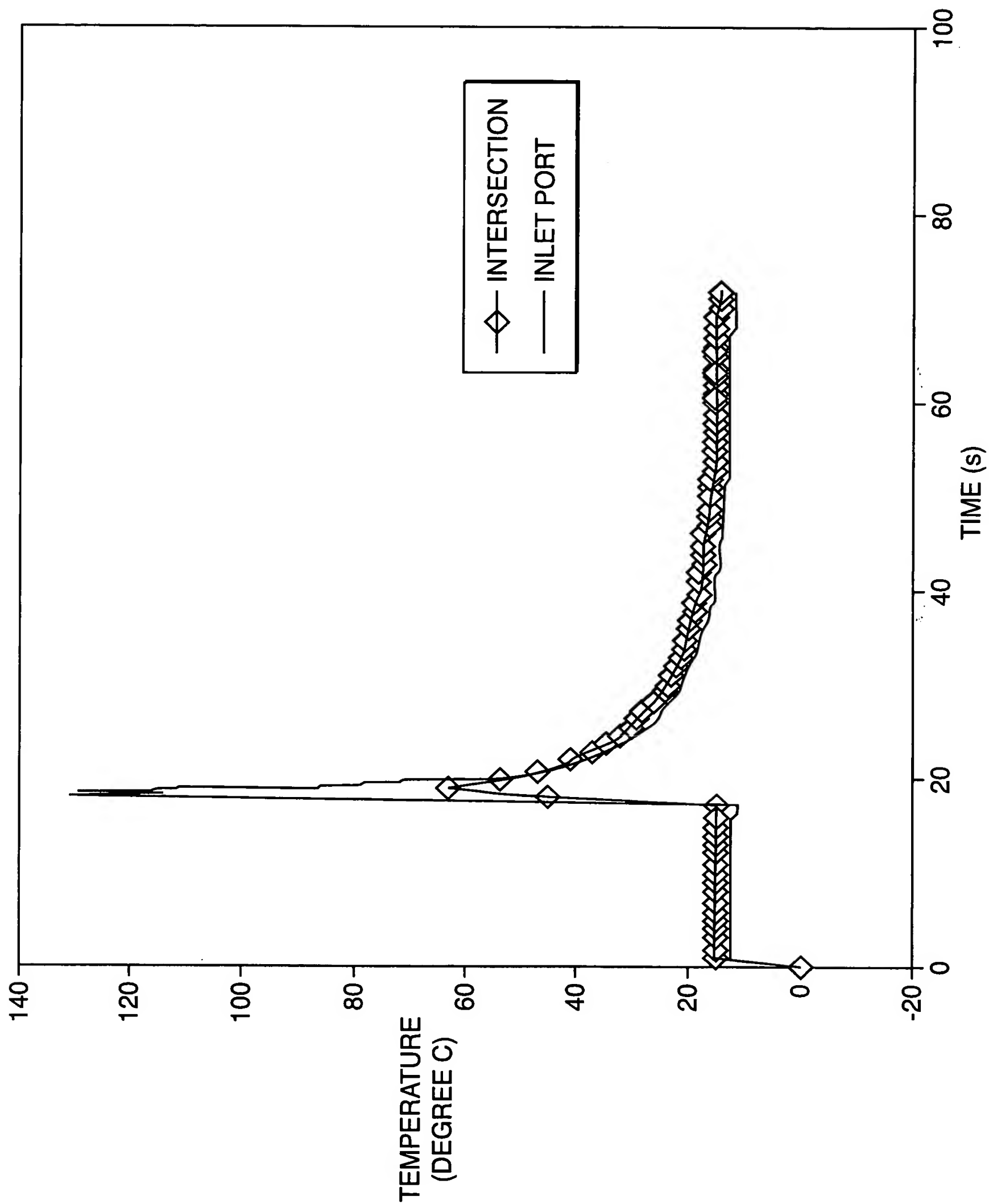


FIG. 25

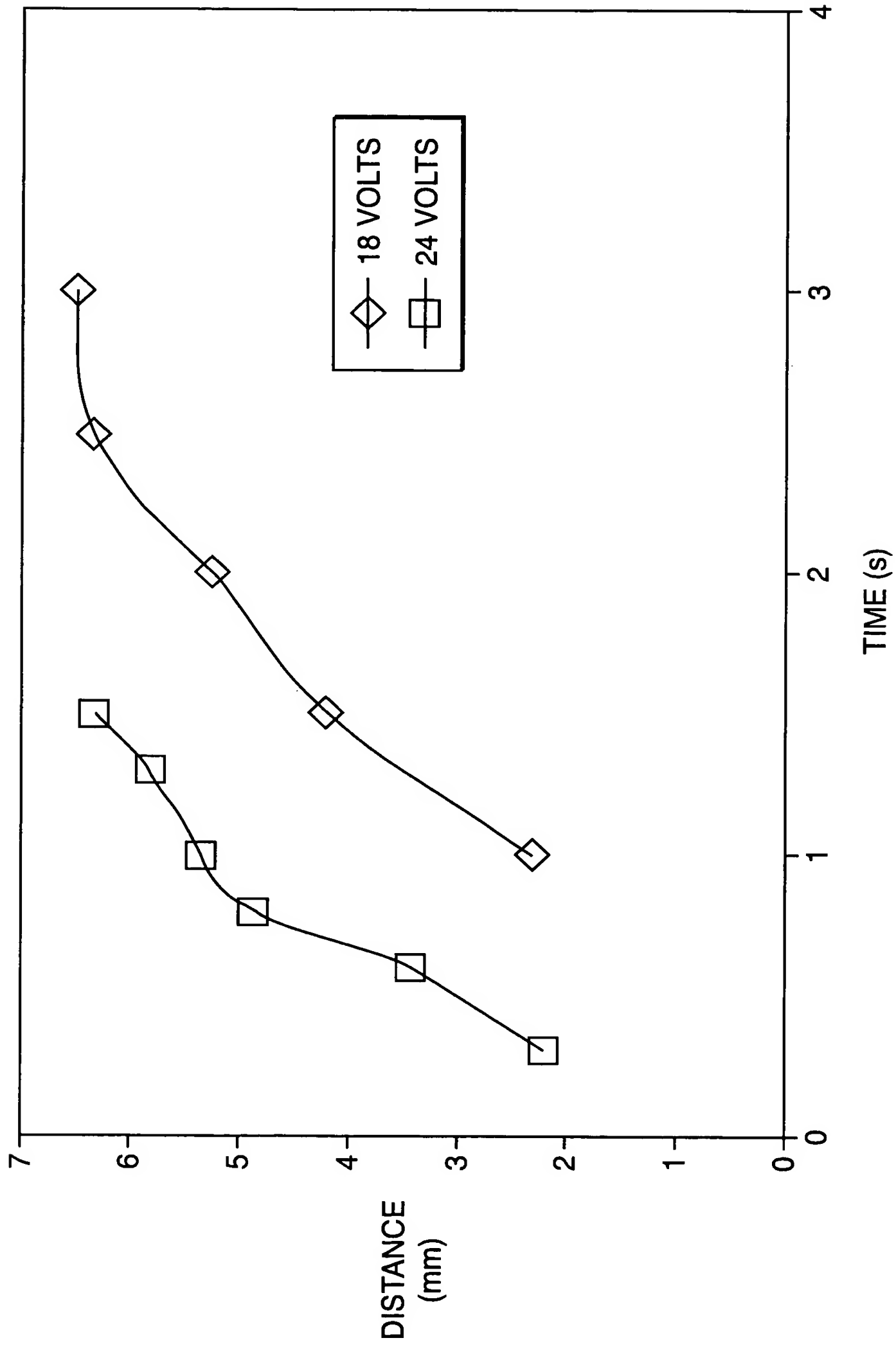


FIG. 26A

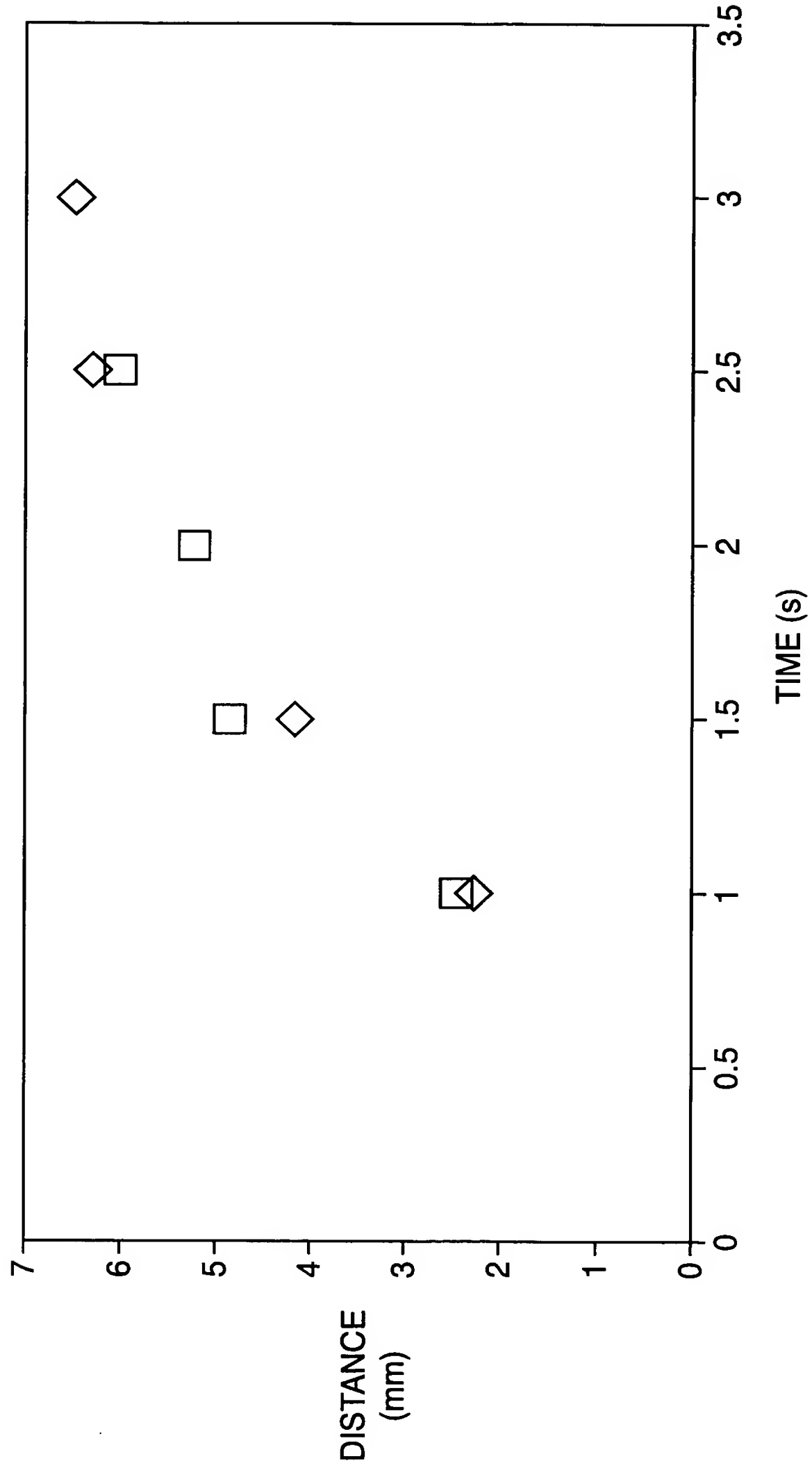


FIG. 26B

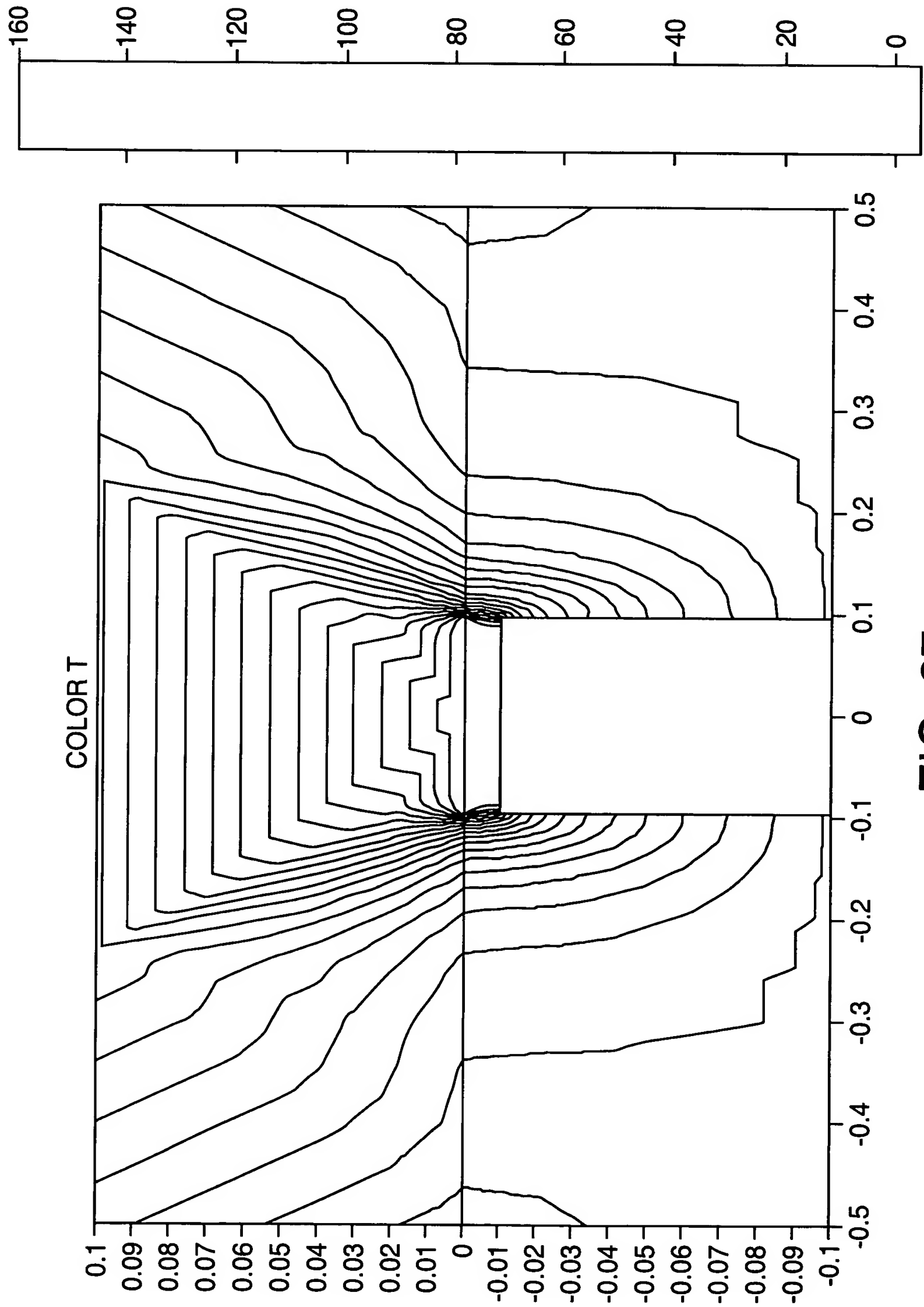


FIG. 27